Retirement and Disability Research Consortium
23rd Annual Meeting

August 5-6, 2021

Virtual Event

Join the conversation on Twitter: #2021RDRC

Retirement and Disability Research Consortium (RDRC) Meeting Organizers:

J. Michael Collins
Faculty Director, Center for Financial Security at the University of Wisconsin–Madison
Fetzer Family Chair in Consumer & Personal Finance, University of Wisconsin–Madison

John P. Laitner
Director, University of Michigan Retirement and Disability Research Center
Research Professor, Institute for Social Research
Professor of Economics, University of Michigan

Nicole Maestas
Director, NBER Retirement and Disability Research Center
Associate Professor of Health Care Policy, Harvard Medical School

Alicia H. Munnell
Director, Center for Retirement Research at Boston College
Peter F. Drucker Professor of Management Sciences, Boston College

Table of Contents

Agenda
12:00PM – 4:00 PM EST

DAY 1: AUGUST 5, 2021

12:00-12:15   **Welcoming Remarks**: Kilolo Kijakazi, U.S. Social Security Administration

               Overview of Sessions: J. Michael Collins, University of Wisconsin-Madison

12:15-1:15   **Panel 1: Understanding the Effects of the Coronavirus Pandemic on Retirement and Disability**
Moderator: Olivia Mitchell (University of Pennsylvania)

               "How Has COVID-19 Affected the Labor Force Participation of Older Workers?" ***Laura Quinby***, *Matthew Rutledge and Gal Wettstein (Boston College)*

               "The Impact of Covid-19 on Older Workers' Employment and Social Security Spillovers" *Gopi Shah Goda (Stanford University),* ***Emilie Jackson*** *(Michigan State University), Lauren Hersch Nicholas (Johns Hopkins) and Sarah Stith (University of New Mexico)*

               "Assessing the Economic Impact Payment in the Older Population" *Gabor Kezdi and* ***David Weir*** *(University of Michigan)*

1:15-1:30   **Break**

1:30-2:30   **Panel 2: Disability Programs and Well-being**
Moderator: Jeffrey Hemmeter (U.S. Social Security Administration)

               "What is the Relationship between Deprivation and Child SSI Participation?" ***Michael Levere*** *(Haverford College/Mathematica), David Wittenburg (Mathematica) and Jeffrey Hemmeter (U.S. Social Security Administration)*

               "The Effects of Expanding Access to Mental Health Services on SS(D)I Applications and Awards" *Isaac Swensen and* ***Carly Urban*** *(Montana State University)*

               "Cash vs. Food? How Does Food Stamp Eligibility Affect the Family Security of SSI Recipients?" *Marianne Bitler (University of California, Davis),* ***Amelia***

Hawkins (*Brandeis University), Lucie Schmidt (Williams College) and Hilary Seligman (University of California San Francisco)*

2:30-2:45   **Break**

2:45-3:45   **Panel 3: Retirement Planning and Preparedness** *Moderator: Jason Fichtner (Bipartisan Policy Center)*

"Efficiency in Household Decision Making: Evidence from the Retirement Savings of US Couples" **Taha Choukhmane** *(MIT Sloan), Lucas Goodman (US Treasury) and Cormac O'Dea (Yale)*

"Explanations for the Decline in Spending at Older Ages" **Michael Hurd**, *Péter Hudomiet and Susann Rohwedder (RAND)*

"How Do Households Adjust When Their Kids Leave Home?" *Andrew Biggs (American Enterprise Institute),* **Anqi Chen** *and Alicia Munnell (Center for Retirement Research at Boston College)*

3:45-4:00   **Wrap up and Overview of Day 2: J. Michael Collins, University of Wisconsin-Madison**

DAY 2: AUGUST 6, 2021

12:00-12:35   **Keynote Introduction**: **Kilolo Kijakazi, U.S. Social Security Administration**

Keynote Speaker: Valerie Wilson, Economic Policy Institute
"Race, Ethnicity and Financial Well-being"

12:35-1:35   **Panel 4: Public Understanding of Social Security Programs and Service, and Vulnerability to Fraud**
Moderator: Marguerite DeLiema (University of Minnesota)

"Mixed-methods Study to Understand Use of MySSA" **Lila Rabinovich** *and Francisco Perez-Arce (University of Southern California)*

"Epidemiologic Study of the Correlates of Scam Susceptibility, Financial Exploitation, and Fraud in Older Adults" **Patricia Boyle**, *Lei Yu (Rush University) and Gary Mottola (FINRA)*

"Improving Public Understanding of OASI: An Experimental Approach"

Sebastian Jilke, Pamela Herd and Donald Moynihan (Georgetown University)

1:35-1:50   **Break**

1:50-2:50   **Panel 5: Disability Applications and Outcomes**
Moderator: Gina Clemons (U.S. Social Security Administration)

"Outcomes Following Social Security Disability Insurance Termination"
Michael Anderson, *Denise Hoffman (Mathematica), and Kai Filion (U.S. Social Security Administration)*

"Do Workers Injured on the Job and Covered by Workers Compensation End Up on SSDI?" **David Neumark** *(University of California-Irvine)*

"Applying Aspects of Disability Determination Methods from the Netherlands in the U.S." Nicole Maestas, **Bastian Ravesteijn** (Harvard), Kathleen Mullen (RAND) and Tisamarie Sherry (RAND)

2:50-3:50   **Panel 6: Health Shocks and Retirement**
Moderator: Irena Dushi (U.S. Social Security Administration)

"The Impact of Medical Spending Shocks on the Wealth and Insurance Purchases of Older Americans" **Eric French** *(University College London), John Bailey Jones (Federal Reserve Bank-Richmond) and Jeremy McCauley (University of Bristol)*

"Economic Security in Retirement: Does Borrowing from Home Equity Moderate the Impact of a Health Shock on Health Outcomes?" **Stephanie Moulton**, *Donald Haurin, Caezilia Loibl, and Joshua Joseph (The Ohio State University)*

"The Impact of Biopharmaceutical Innovation on Disability, Social Security Recipiency, and Use of Medical Care of U.S. Community Residents" **Frank R. Lichtenberg** *(Columbia University)*

3:50-4:00   **Closing Remarks: J. Michael Collins, University of Wisconsin-Madison**

Panel 1: Understanding the Effects of the Coronavirus Pandemic on Retirement and Disability

Moderator: Olivia Mitchell (University of Pennsylvania)

How Has COVID-19 Affected the Labor Force Participation of Older Workers?
Laura Quinby, *Matthew Rutledge and Gal Wettstein (Boston College)*

The Impact of Covid-19 on Older Workers' Employment and Social Security Spillovers
Gopi Shah Goda (Stanford University), **Emilie Jackson** *(Michigan State University), Lauren Hersch Nicholas (Johns Hopkins) and Sarah Stith (University of New Mexico)*

Assessing the Economic Impact Payment in the Older Population
Gabor Kezdi and **David Weir** *(University of Michigan)*

How Has COVID-19 Affected the Labor Force Participation of Older Workers?

Laura D. Quinby, Matthew S. Rutledge, and Gal Wettstein
Center for Retirement Research at Boston College

Prepared for the 23rd Annual Meeting of the Retirement and Disability Research
Consortium August 5 & 6, 2021

Introduction

Before the COVID-19 pandemic, retirement and Social Security claiming ages were steadily rising.[1] However, the pandemic may have interrupted this trend. While it is to be expected that some older workers left their jobs during a health crisis and global recession, questions remain about the pandemic's ultimate impact: will older individuals return to work as the pandemic recedes and the economy recovers, or did COVID-19 trigger a permanent exodus from the labor force? To provide a benchmark, this study compares the rate at which older individuals left work and transitioned into retirement during the pandemic (March-December 2020), relative to a similar period before the pandemic. It then explores how the pandemic differentially affected older individuals based on their demographic characteristics, job conditions, and local circumstances.

Data and Methodology

This study examines the *Current Population Survey* (CPS), a large monthly sample of U.S. households with information about labor force status and other economic outcomes. Respondents are surveyed in each of four consecutive months, then are out of the sample for eight months, before re-entering the sample the next calendar year during the same four calendar months as the previous year. For example, a respondent who is surveyed in March-June 2019 is surveyed again in March-June of 2020. This study considers individuals ages 55 or older, tracking changes in their labor-force status between their 4th month and their last month in the survey, which occurs one year later.

Specifically, the study compares the experience of two groups of workers: the pre-pandemic group have both their 4th-month and final interviews before April 1, 2020, while the post-pandemic group have their 4th-month interview before April 1, 2020 and their final interview after that date.[2] We assume that the post-pandemic group would have behaved similarly to the pre-pandemic group had COVID-19 not occurred, and broadly attribute any differences in behavior to the pandemic.

---

[1] Hou et al. (2021 forthcoming); Chen and Munnell (2021).
[2] The analysis stops in December 2020 to avoid the confounding effect of vaccination efforts.

For each group of workers, we conceptualize labor-force transitions in two ways. First, we examine the rate of employment exit by focusing on a sample of people who were working at the time of their 4th-month interview, and observe whether they are still working in the final month. We then shift the focus to retirement by taking a sample of people who are not retired in the 4th month and observing whether they report retiring from the labor force in the final month.

The analysis focuses on several circumstances under which individuals may have been induced to retire. The first circumstance reflects individual capacity and comfort with continued work. Namely, older individuals and those with older spouses are expected to leave the labor force because they were told to maintain strict social distancing and because workers who are eligible to claim Social Security may not need to continue working. Similarly, poor health is expected to encourage retirement, although due to data limitations, health status in this analysis reflects only severe limitations on activity.[3] The second circumstance is the unequal effect of the pandemic on various demographic groups; we consider gender, race, and Hispanic origin. The next circumstance is working conditions, specifically the worker's ability to work remotely, education level, and self-employed status. The last circumstance is the severity of the pandemic itself. To capture pandemic severity, the analysis accounts for the peak monthly share of the population who died from COVID-19 in the respondent's county, as well as the county's population density; to capture local labor market conditions, the analysis accounts for the lowest employment rate in the respondent's county in the 12 months between interviews.

Using a regression framework, the analysis first estimates how each of these circumstances was correlated with the likelihood of job separation and retirement, all else equal, before COVID-19. It then estimates how these pre-pandemic correlations *changed* during the pandemic period. The regressions also control for the evolution of national and state economic conditions over time, but these factors are not the focus of our study.

Results

Figure 1 shows the share of older individuals who were working at the time of the 4th-month interview but were no longer working at the last interview 12 months later (the x-axis labels the month of the last interview). Before COVID-19, about 15 percent of older workers

_____

[3] Specifically, someone is considered to have a health issue if they reported difficulty with hearing, vision, memory, physical activity, mobility, or personal care.

would leave employment within a year of their 4th-month interview. That share increased

sharply in April 2020 to 32 percent. In subsequent months, a lower percentage of older people

left work, but the share remained near or above 20 percent throughout the rest of calendar year

2020. Overall, the probability of leaving the workforce increased by a statistically significant 8

percentage points during the pandemic.

Figure 1. *Share of Workers Ages 55+ Who Left Their Jobs Over the Course of a Year, 2019-2020*
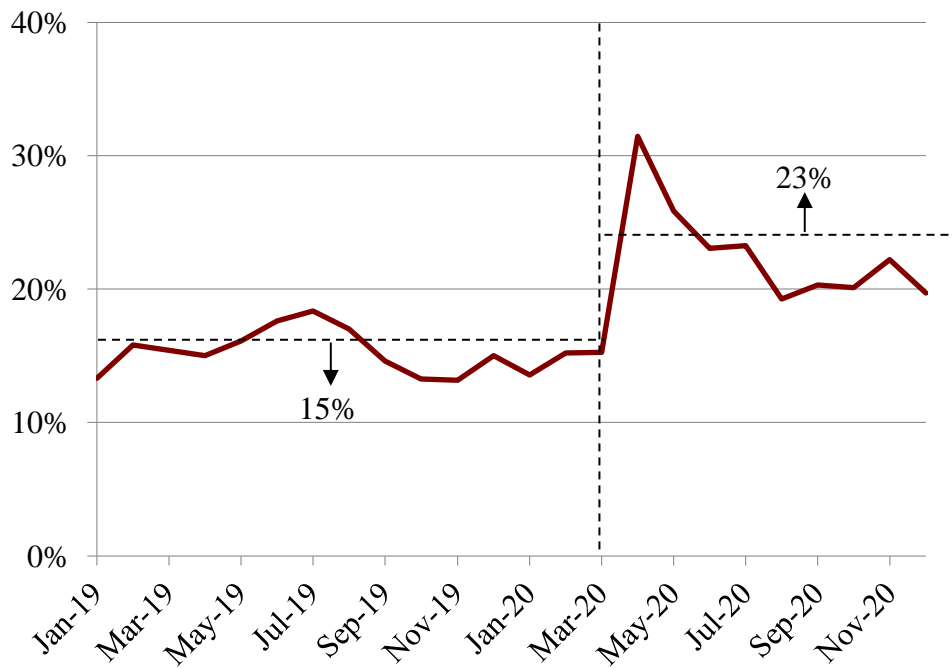
Source: Authors' estimates from the U.S. Census Bureau *Current Population Survey* (2019-2020).

However, the effect of the pandemic was not evenly distributed. In particular, women

were 2 percentage points more likely to leave employment than men, all else equal, while Asian-

Americans were nearly 7 percentage points more likely to leave employment than non-Hispanic

white workers. On the other hand, college graduates were about 4 percentage points less likely

to leave employment than workers without a college degree; and those who could telework were

about 4 percentage points less likely to leave employment than those who could not work

remotely. Conversely, workers ages 60-69 were not significantly more likely to leave their jobs

than those ages 55-59, and the local severity of the pandemic and economic downturn seems to

have had little impact.

For individuals ages 55 and older, leaving the workforce is usually associated with the decision to retire, whether voluntarily or involuntarily. But the pandemic was not associated with a large increase in self-reported retirements. Figure 2 plots the share of older individuals, who were not retired during their 4th-month interview, who cite retirement as their reason for leaving the labor force over the course of the year. The trend is largely flat: the average retirement rate before the pandemic was 12 percent, compared to 13 percent post-pandemic. That 1-percentage-point difference is statistically significant but qualitatively small compared to the change in employment. Moreover, the demographic and work characteristics that predicted job separation did not predict retirement, with one exception – individuals ages 70 and older were 6 percentage points more likely to retire during the pandemic than those ages 55-59.

Figure 2. *Share of Individuals Ages 55+ Who Retired Over the Course of a Year, 2019-2020*
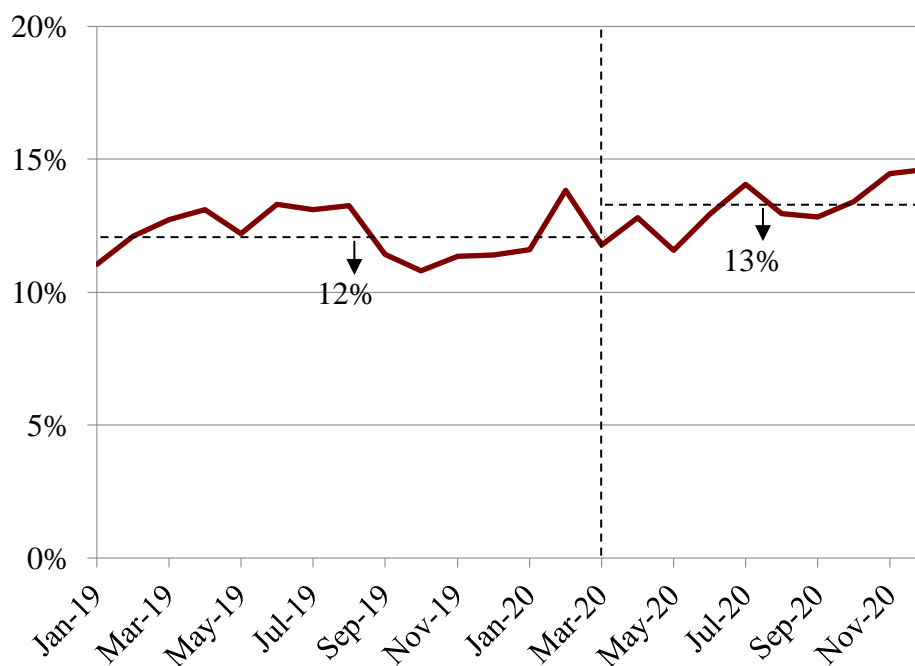
Source: Authors' estimates from the U.S. Census Bureau *Current Population Survey* (2019-2020).

The relatively modest increase in self-reported retirement, concentrated among individuals over age 70, suggests that Social Security retirement claiming might not have gone up during the pandemic. Most individuals in this age group had already claimed benefits before the pandemic started because Social Security's actuarial adjustment does not reward workers for delayed claiming past 70. Since the monthly CPS data do not ask about Social Security benefit

receipt, we turn to administrative data from the Social Security Administration to examine trends in claiming. As predicted, monthly applications for retirement benefits remained constant as a share of the older population between April 2019 and June 2021 (Figure 3).

Figure 3. *Monthly Social Security Retirement Benefit Applications, Relative to the Population Ages 55+, 2019-2020*
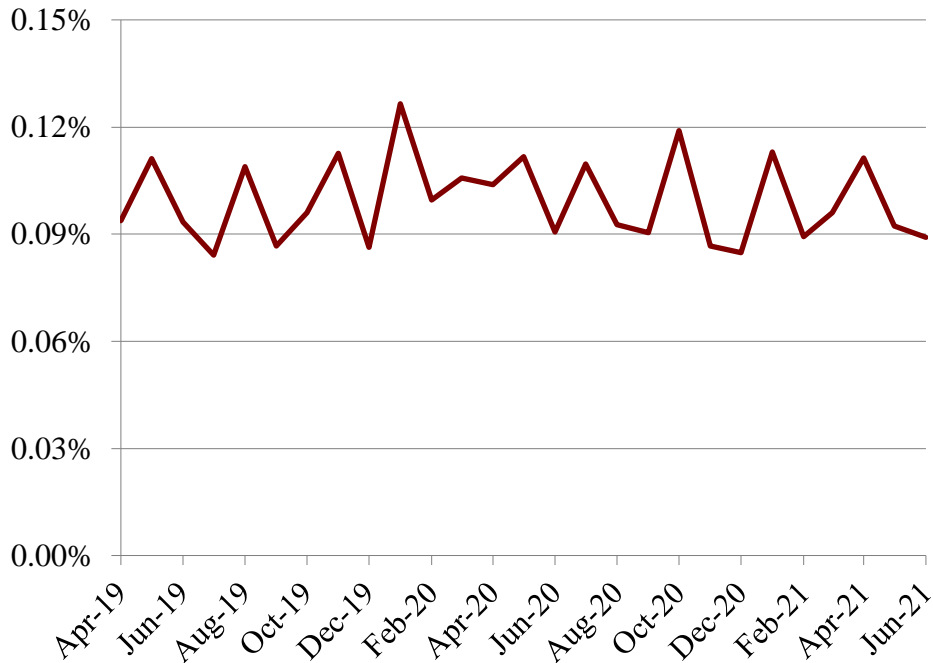
Source: Authors' calculations from the U.S. Social Security Administration. 2019-2021. Claims Data.

Conclusion

COVID-19 has impacted every aspect of life, work included. This paper explores how work, retirement, and Social Security claiming were affected by the pandemic and which groups were most impacted. Although many older individuals left the workforce, most are not yet reporting retirement and have not yet claimed Social Security benefits. Consequently, we do not know how this disruption will affect their financial security in retirement. Some older workers who left their jobs may have always planned to continue working once the pandemic ebbed and they could find new employment; their outcomes will depend on their ability to successfully re-enter the workforce. Others may not plan to continue working, but delayed claiming Social Security because they had alternative sources of income in the short run. It may take a few years before researchers are able to fully investigate these possibilities.

References

Chen, Anqi and Alicia H. Munnell. 2021. "Pre-COVID Trends in Social Security Claiming."
    Issue in Brief 21-9. Chestnut Hill, MA: Center for Retirement Research at Boston
    College.

Hou, Wenliang, Alicia Munnell, Geoffrey Todd Sanzenbacher, and Yinji Li. 2021 (forthcoming).
    "Why Are U.S. Men Retiring Later?" *Journal of Pension Economics and Finance*.

The Impact of Covid-19 on Older Workers' Employment and Social Security Spillovers

Gopi Shah Goda
Stanford University
and NBER

Emilie Jackson
Michigan State
University

Lauren Hersch Nicholas
Colorado School
of Public Health

Sarah See Stith
University of
New Mexico

Prepared for the 23nd Annual Meeting of the Retirement and Disability Research Consortium August 5 & 6, 2021

Introduction

The COVID-19 global pandemic created an unprecedented time of economic and social disruption, and transformed the economy from one of the strongest labor markets to record-breaking numbers of job losses almost overnight. The U.S. went from a few dozen confirmed cases of COVID-19, caused from a novel coronavirus, to almost 800,000 cases in less than two months from late February to late April 2020, and has more than 30 million confirmed cases as of this writing. In an effort to slow the spread of COVID-19, several states and localities issued guidelines regarding social distancing and orders requiring workers to stay at home, preventing many from showing up to work and devastating businesses around the country. Even when states failed to offer such guidance, mobility data indicated a marked reduction in travel outside the house as Americans tried to avoid the threat of disease.

The COVID-19 pandemic represents a particular threat to older and disabled workers, who are economically and physically vulnerable to the twin threats of long-term health impacts from virus spread and shutdown policies that reduced labor demand and supply. COVID-19 is associated with higher rates of mortality among those at older ages and with comorbidities (Rosenthal et al., 2020). While the longer-term health effects of COVID-19 are still not well understood, preliminary evidence suggests that lingering symptoms may preclude a return to work for those with long-COVID or other persistent health concerns. Older and disabled workers are also more vulnerable to permanent labor market exits during recession-induced job losses, and have additional margins of response due to the potential availability of benefits through Social Security.

Our research adds to the literature on the effects of recessions on older and disabled workers more generally, and allows a comparison of how older workers fared in the COVID-19 recession relative to prior recessions. Prior research finds that when recessions occur near the time of retirement, older workers are more likely to leave the labor force and collect Social Security sooner (Coile and Levine, 2007, 2011). Munnell and Rutledge (2013) document widespread effects of the Great Recession on Social Security, including increases in early retirement claims and disability applications. Other work has found that older workers delay retirement in an effort to recover lost earnings and wealth (Helppie McFall, 2011; Chan and Stevens, 1999; Gustman, Steinmeier and Tabatabai, 2010; Goda, Shoven and Slavov, 2011).

A large existing literature has found that disability claiming through SSI and SSDI is sensitive to economic conditions and the generosity of other related public programs, such as UI (Stapleton et al., 1998; Autor and Duggan, 2003; Coe, Haverstick et al., 2010; Cutler, Meara and Richards-Shubik, 2012; Maestas, Mullen and Strand, 2015, 2018; Schmidt, 2012; Black, Daniel and Sanders, 2002; Charles, Li and Stephens Jr, 2018). These studies generally find that higher rates of unemployment lead to larger numbers of applications for SSI and SSDI, increasing both processing costs and benefit obligations substantially. Although more generous UI benefits are also associated with reduced SSDI claiming (Lindner, 2016), the expiration of UI benefits did not lead to meaningful increases in SSDI applications during the Great Recession (Mueller, Rothstein and Von Wachter, 2016).

Data and Methods

In this paper, we examine labor market outcomes and Social Security spillovers among individuals aged 50-70, who comprise approximately 40 percent of the labor force, over the course of the economic recession caused by the COVID-19 pandemic. We use the Current Population Survey (CPS) to track monthly employment outcomes from January 2015- March 2021. The CPS records one's labor force status as employed, unemployed, or not in the labor force. People report being out of the labor force due to retirement, disability, or other (unspecified) reasons. Our analyses distinguish between workers age 50-61 and 62-70, due to differences in eligibility for retirement benefits and different rates of baseline employment across these two groups. While the CPS provides the ability to perform individual-level analysis, it lacks direct measures of Social Security benefit claiming.

We address this issue by supplementing our analysis with three additional sources of data. The first two are administrative datasets made publicly available by the Social Security Administration (SSA). The SSA State Agency Monthly Workload Data reports historical and current information about the processing of claims for disability benefits. The dataset includes the monthly numbers of claims for disability benefits that were referred for a disability determination to one of the 54 state agencies. We use data on initial claims for Supplementary Security Income (SSI), Social Security Disability Insurance (SSDI), and concurrent SSI and SSDI applications for each state and month between January 2015 and March 2021.

We also analyze SSA Monthly Data for Retirement Insurance Applications which reports the number of national applications filed online and in total, from which we can back out the number of 9 applications filed in person and by phone. However, these data are only available at the national level, so we are not able to see how these data vary by state.

Our final source of data comes from Google Trends, which makes measures of search intensity publicly available nationally and by state on a monthly or weekly basis. We download data at the month by state level and focus on the broad search terms "disability," "retirement," and "Social Security" to enhance the reliability of the data. Google Trends data allow us to examine online searches for retirement and disability to analyze benefit claiming behavior and search activity that may indicate future benefit claiming plans.

Findings

We find evidence that employment among older workers declined sharply in April, before slowly recovering and leveling off, leading to an average deviation from predicted employment of 5.7 percentage points (for 50-61-year-olds; 8.3%) and 3.9 percentage points (for 62-70-year-olds; 10.7%) between March 2020 and March 2021. For 50-61-year-olds,

Figure 1: Event Studies of Employment Outcomes from the CPS Among 50-70 Year Olds

(a) Employed   (b) NILF (Disability, Retired, Other)
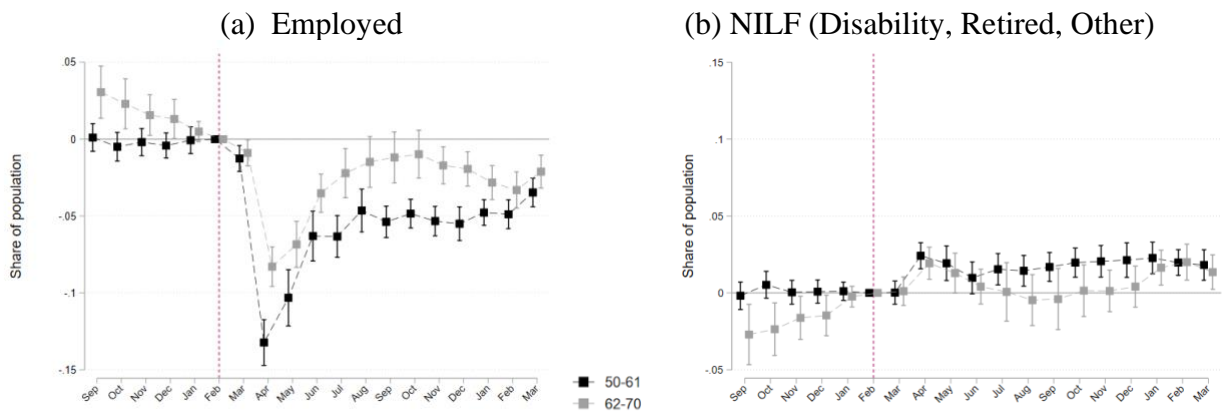
Notes: Sample contains civilians ages 50-70 from the January 2015-March 2021 CPS living in the United States. Outcome variable is whether an individual is employed, or not in the labor force. Standard errors are robust and clustered at the state level. Estimates are weighted using survey weights and 95% confidence intervals are shown. The event time is relative to February 2020. Regressions include a time trend, month and state fixed effects and adjust for age, sex, race, Hispanic ethnicity, education, and household family size.

approximately 63 percent of the decline is due to increases in unemployment, and 30 percent is due to increases in labor force exits due to reasons other than retirement and disability. Among 2 62-70-year-olds, the decline attributed to increases in unemployment is 50 percent and the next largest component is an increase in retirement of 1.2 percent, accounting for 30 percent of the employment decline, and representing a 2.4 percent increase relative to the baseline.

Our results show consistent evidence of declines in labor market exits due to disability and applications for disability after the start of the pandemic. Older workers are 0.4 percentage points (4-5 percent) less likely to report exiting the labor force due to disability in the first year after the start of the pandemic. We find a larger (15 percent) decrease in overall disability applications, which appears to be driven by reductions in applications for SSI and concurrent SSI and SSDI applications, and a decline in Google search intensity for disability and related words of 7 percent.

Figure 2: Event Study of Social Security Disability Applications - Total SSI + SSDI
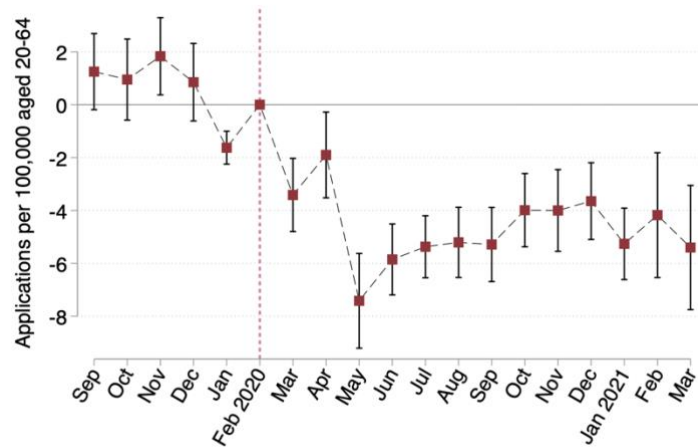
Notes: Sample comes from the SSA State Agency Monthly Workload and ranges from January 2015 to March 2021. Outcome variable is weekly applications per 100,000 people aged 20 to 64. Standard errors are robust and clustered at the state level. 95% confidence intervals are shown. Regressions include month, year, and state fixed effects and event time relative to February 2020.

The implications of the pandemic for retirement behavior are more mixed. While the CPS shows increases in labor market exits due to retirement for 62-70-year-olds in particular, we do not find evidence that retirement applications changed differentially between March 2020 and March 2021 relative to predicted levels. However, our results do show a shift from SSA

retirement applications filed offline to those filed via the internet. Our analysis of online search activity for retirement-related search terms finds declines of 7 percent relative to the period prior to the pandemic. Together, our results suggest that elevated labor market exits due to retirement have not yet been accompanied by a large increase in older workers transitioning to Social Security during the first 12 months after the pandemic relative to what would have been predicted in its absence.

We also examine heterogeneity in the labor market outcomes by demographic characteristics. A differential impact on the more vulnerable is persistent throughout our results, in line with the marked reduction in SSI applications. Those with less education, Blacks, and Hispanics generally experienced worse labor market outcomes and were less likely to not be in the labor force for retirement reasons.

Finally, we explore several potential mechanisms for our findings. While we cannot rule out supply-side explanations for reductions in employment, such as caregiving needs or virus fears keeping people out of employment, we also find evidence of demand-side explanations, such as employment reductions resulting from business closures and statewide shutdown policies. We do not find evidence that disability applications changed differentially based on state shutdown policies, degree of teleworkable jobs, or internet connectivity; however, survey data reinforce the fact that a non-trivial fraction of individuals decided not to apply for Social Security benefits as a result of the pandemic (United States Census Bureau, 2021). This rate was higher among those receiving unemployment insurance, suggesting that expanded Unemployment Insurance (UI) benefits resulting from the Coronavirus Aid, Relief, and Economic Security (CARES) Act passed in March 2020 and the American Rescue Plan passed in March 2021 may have reduced incentives to apply for disability insurance or claim early retirement benefits.

Conclusions

We explore several mechanisms for our results, including factors related to labor supply and demand, as well as factors that may separate induce demand for Social Security benefits and/or limit the access of individuals to those benefits. Our results are generally consistent with reductions in labor demand, through stay-at-home orders and business closures, playing an important role in employment outcomes we examine, but we cannot rule out the presence of

supply-side factors, such as concerns about caregiving, fear of contracting COVID-19, or enhanced unemployment benefits and economic impact payments, playing a role. Our findings are also consistent with individuals seeking benefits, particularly through the SSI program, encountering difficulties due to office closures and low internet access, and with UI potentially leading people to delay claiming benefits.

The different forces driving our results are important to understand due to their implications for longer-term projections, as well as the fiscal implications of the Social Security program. On the retirement side, actuarial factors that increase benefits for later retirement have been shown to be more than actuarially fair for a large share of the population (Shoven and Slavov, 2014), suggesting that earlier retirement could improve Social Security finances. For disability benefits, higher rates of applications and awards could increase the program's costs relative to its income. If part of the decline in benefits is driven by access issues or due to enhanced unemployment benefits, it is possible that there will be a surge in applications once these access issues subside, with no long-term fiscal implications. However, it is also possible that application levels persist at a lower level if disability incidence is lower due to telework options or if COVID-19 resulted in deaths among populations that were disproportionately on the margin of program application.

The long-term effects of the pandemic on labor markets and associated spillovers to disability and retirement claiming will remain uncertain until Social Security field offices reopen, extended unemployment benefits expire in September 2021, higher vaccination rates allow the economy to reopen fully, and the redesign of some workplaces and occupations to accommodate the flexibility to work from home converges. These ongoing changes highlight the importance of continuing to monitor changes in employment outcomes among older workers and spillovers onto the Social Security program going forward.

References

Autor, David H, and Mark G Duggan. 2003. "The rise in the disability rolls and the decline in unemployment." *The Quarterly Journal of Economics*, 118(1): 157–206.

Black, Dan, Kermit Daniel, and Seth Sanders. 2002. "The impact of economic conditions on participation in disability programs: Evidence from the coal boom and bust." *American Economic Review*, 92(1): 27–50.

Chan, Sewin, and Ann Huff Stevens. 1999. "Employment and retirement following a late-career job loss." *American Economic Review*, 89(2): 211–216.

Charles, Kerwin Kofi, Yiming Li, and Melvin Stephens Jr. 2018. "Disability benefit take-up and local labor market conditions." *Review of Economics and Statistics*, 100(3): 416–423.

Coe, Norma B, Kelly Haverstick, et al. 2010. "Measuring the spillover to disability insurance due to the rise in the full retirement age." Boston College Center for Retirement Research Working Paper, 21.

Coile, Courtney C, and Phillip B Levine. 2007. "Labor market shocks and retirement: Do government programs matter?" *Journal of Public Economics*, 91(10): 1902–1919.

Coile, Courtney C, and Phillip B Levine. 2011. "Recessions, retirement, and social security." *American Economic Review*, 101(3): 23–28.

Cutler, David M, Ellen Meara, and Seth Richards-Shubik. 2012. "Unemployment and disability: Evidence from the Great Recession." NBER Retirement Research Center Paper, No. NB 12-12.

Goda, Gopi Shah, John B Shoven, and Sita Nataraj Slavov. 2011. "What explains changes in retirement plans during the Great Recession?" *American Economic Review*, 101(3): 29–34.

Gustman, Alan L, Thomas L Steinmeier, and Nahid Tabatabai. 2010. "What the stock market decline means for the financial security and retirement choices of the near-retirement population." *Journal of Economic Perspectives*, 24(1): 161–82.

Helppie McFall, Brooke. 2011. "Crash and wait? The impact of the Great Recession on the retirement plans of older Americans." *American Economic Review*, 101(3): 40–44.

Lindner, Stephan. 2016. "How do unemployment insurance benefits affect the decision to apply for social security disability insurance?" *Journal of Human Resources*, 51(1): 62–94.

Maestas, Nicole, Kathleen J Mullen, and Alexander Strand. 2015. "Disability insurance and the great recession." *American Economic Review*, 105(5): 177–82.

Maestas, Nicole, Kathleen J Mullen, and Alexander Strand. 2018. "The effect of economic conditions on the disability insurance program: Evidence from the great recession." National Bureau of Economic Research Working Paper 25338.

Mueller, Andreas I, Jesse Rothstein, and Till M Von Wachter. 2016. "Unemployment insurance and disability insurance in the Great Recession." *Journal of Labor Economics*, 34(S1): S445–S475.

Munnell, Alicia H, and Matthew S Rutledge. 2013. "The effects of the Great Recession on the retirement security of older workers." *The Annals of the American Academy of Political and Social Science*, 650(1): 124–142.

Rosenthal, Ning, Zhun Cao, Jake Gundrum, Jim Sianis, and Stella Safo. 2020. "Risk Factors Associated With In-Hospital Mortality in a US National Sample of Patients With COVID-19." *Journal of the American Medical Association*, 3(12): e2029058.

Schmidt, Lucie. 2012. "The Supplemental Security Income Program and Welfare Reform." Federal Reserve Board of Boston Public Policy Discussion Paper 12-3.

Shoven, John B., and Sita Nataraj Slavov. 2014. "Does it pay to delay social security?" *Journal of Pension Economics and Finance*, 13(2): 121–144.

Stapleton, David, Kevin Coleman, Kimberly Dietrich, and Gina Livermore. 1998. "Empirical analyses of DI and SSI application and award growth." *Growth in Disability Benefits: Explanations and Policy Implications,* 31–92.

United States Census Bureau. 2021. "Household Pulse Survey Public Use Files [dataset]."

Assessing the Economic Impact Payment in the Older Population

Gabor Kezdi, David Weir
University of Michigan

Project Abstract

The COVID-19 pandemic is the greatest threat to the health and well-being of the older population in at least a century. The economic consequences of public health policies to mitigate that threat are also of serious concern. This project proposes to study one part of the policy response. We will use data collected by the Health and Retirement Study in its 2020 wave to study awareness and impact of the Economic Impact Payment (EIP) stimulus on different groups of older Americans during the coronavirus pandemic. The EIP was authorized as part of the Coronavirus Aid, Relief, and Economic Security (CARES) Act passed in late March 2020. It provides for a direct stimulus payment to individuals, similar to stimulus programs in previous economic downturns in 2001 and 2008. The great advantage to studying the impact of the EIP in HRS is the volume of other information that can be used to understand differentials in eligibility, awareness, and disposition. From the 2020 survey we will know about the impact of COVID-19 on work and health, as well as the usual measures of income and wealth.

Due to unforeseen circumstances, a project summary could not be prepared. A link to the final paper will be published here on the project webpage:

https://mrdrc.isr.umich.edu/projects/assessing-the-economic-impact-payment-in-the-older-population/

Panel 2: Disability Programs and Well-being

Moderator: Jeffrey Hemmeter (U.S. Social Security Administration)

What is the Relationship between Deprivation and Child SSI Participation?
Michael Levere (*Haverford College/Mathematica*), *David Wittenburg (Mathematica) and Jeffrey Hemmeter (U.S. Social Security Administration)*

The Effects of Expanding Access to Mental Health Services on SS(D)I Applications and Awards
*Isaac Swensen and **Carly Urban** (Montana State University)*

"Cash vs. Food? How Does Food Stamp Eligibility Affect the Family Security of SSI Recipients?" *Marianne Bitler (University of California, Davis),* **Amelia Hawkins** (*Brandeis University*), *Lucie Schmidt* (*Williams College*) *and Hilary Seligman (University of California San Francisco)*

What is the Relationship between Deprivation and Child SSI Participation?

Michael Levere
Mathematica

David Wittenburg
Mathematica

Jeffrey Hemmeter
Social Security Administration

Introduction

Substantial geographic variation exists in children receiving Supplemental Security Income (SSI), though the factors driving this variation are not well understood (Wittenburg et al. 2015). SSI participation may be low in areas that have low poverty rates or low rates of child disability and special education participation (Schmidt and Sevak 2017), in which case fewer people would be eligible for SSI. However, SSI participation may also be low in areas with a great need for supports, but where barriers prevent people from accessing benefits. For example, inability to access local field offices, lack of information, program complexity, and stigma can prevent people from enrolling in programs that would help them (Deshpande and Li, 2019; Bhargava and Manoli, 2015). Conversely, SSI participation might be higher in areas where there are stronger facilitators to applying for benefits, such as support from advocates or better knowledge within the community of SSI supports (Wittenburg et al. 2015).

Understanding whether an area has low child SSI participation because the supports are not needed or because of barriers to participating would help SSA to better administer the program. Section 1635 of the Social Security Act requires an ongoing outreach program to connect potentially eligible children with SSI. In this paper, we assess how local child SSI participation correlates with economic deprivation, which reflects an area's income, education, employment, and housing quality. The families of children in areas with high deprivation are more likely to need SSI than in areas with less deprivation. Low child SSI participation in an area relative to that expected based on its level of deprivation may point to a need for outreach.

Data and methods

We use administrative data to measure the number of children receiving SSI at the Census tract and county levels in 2019. We scale this count per 1,000 youth in the geographic unit. An important contribution of this paper is measuring SSI participation at the Census tract level given there can be large variation in participation across regions within a county. The Census tract can be particularly helpful in considering outreach to more precisely defined areas.

We relate child SSI participation to an established measure of economic deprivation from the Health Resources and Services Administration called the Area Deprivation Index (ADI), which incorporates information about income, education, housing, and other local characteristics. Research has linked areas with greater economic deprivation to worse health outcomes (Kind et al. 2014, Hu et al. 2018). We created measures of ADI at both the Census tract and county levels

using data from the American Community Survey 5-year statistics from 2015-2019, following the general process described in Singh (2003). The final index is expressed as a percentile to indicate the relative level of deprivation in the local geography relative to the rest of the country.

Our primary analysis stems from measuring the "deviation" between actual and predicted SSI participation based on a regression of youth SSI participation in 2019 on deprivation. We weighted the regression by youth population. The deviation is the residual from the regression (the difference between the predicted value of youth SSI participation based on the local level of deprivation and the observed youth SSI participation). Deviation can be either negative or positive. A negative deviation indicates that actual SSI participation was lower than predicted participation. Conversely, a positive deviation indicates that actual SSI participation was higher than predicted participation.

We then explore characteristics of local areas associated with larger or smaller deviation to better understand the places that are most in need of outreach. Using a regression framework, we correlate a variety of measures with the measure of deviation. The primary measures we consider are: (1) the geographic region (as defined by the Census – Northeast, South, Midwest, and West); (2) the percentage of the population that is either non-White or has a disability; (3) population density; (4) the ADI measure; and (5) social capital (as defined by Rupasingha et al. 2006). We estimate multivariate regressions including all characteristics and present standardized coefficients to compare magnitudes more easily. We focus on the Census tract findings because it offers greater local variation, though findings are similar at the county level.

Finally, to explore how the COVID-19 pandemic has affected the underlying relationship, we assessed whether the change in applications from 2019 to 2020 was associated with both deprivation and deviation. In total, SSI applications declined by 17 percent in 2020, with substantial geographic variation in the decline. For this analysis, we focus only on the county level due to data availability.

Results

Overall, there is a strong positive relationship between deprivation and youth SSI participation, which is expected given SSI serves low-income populations. For each additional decile higher deprivation score (i.e., the 20th percentile rather than the 10th percentile), youth SSI participation on average increases by 3.3 per 1,000. Relative to the mean of 17.3 per 1,000 in the average Census tract, this represents an increase of nearly 20 percent.

Geographic heterogeneity. Many regions have higher or lower actual SSI participation than predicted participation (Figure 1). We define an area to have higher (lower) actual participation than predicted participation if the deviation measure is greater than the 75th percentile (lower than the 25th percentile) of the deviation distribution. The areas with lower actual participation than predicted are disproportionately located in the Midwest – about 38 percent of Census tracts in the Midwest fall in this category versus 21 percent in the rest of the country. These areas might benefit from outreach given their relatively limited SSI participation. The areas with higher actual participation than predicted are disproportionately located in the Northeast and the South – about 35 percent of Census tracts in the Northeast and 32 percent in the South fall in this category versus 16 percent in the rest of the country. These areas drove much of the growth in SSI from 1996 to 2015 (Wittenburg et al. 2015).

Figure 1. *Deviation between actual and predicted youth SSI participation, county level.*
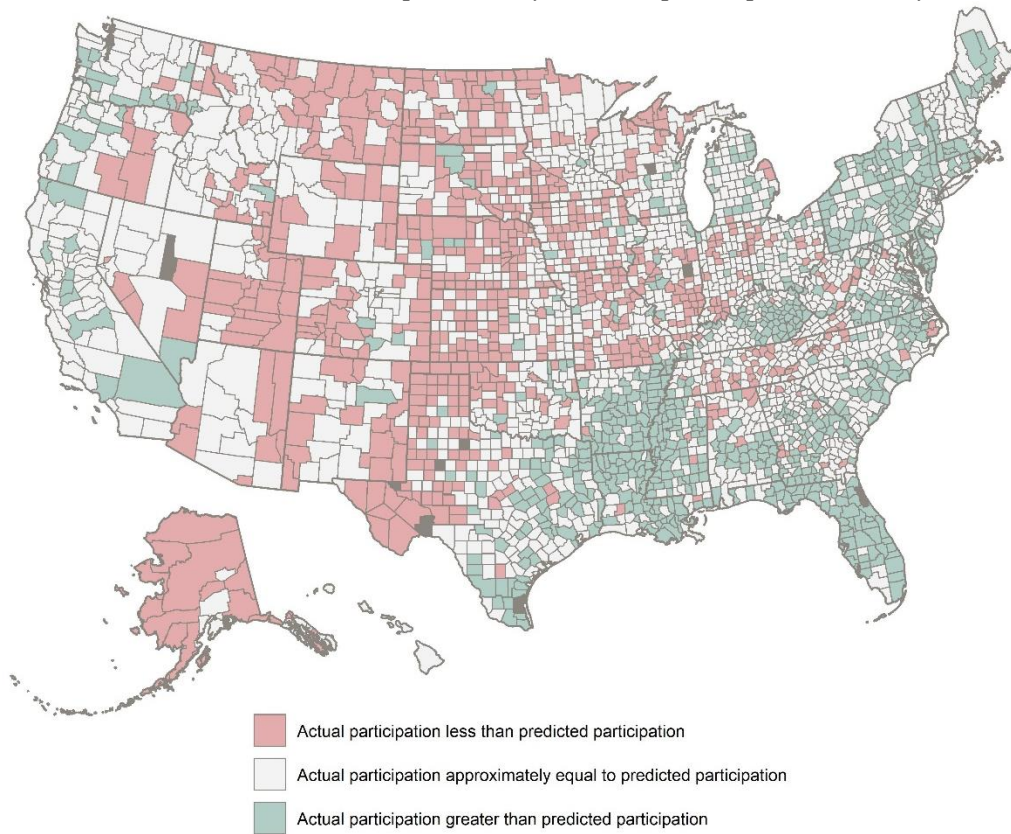
Note: Counties are characterized as having actual participation greater (less) than predicted participation if deviation is greater than the 75th percentile (less than the 25th percentile).

Within counties, individual Census tracts often vary in terms of whether actual participation is higher or lower than predicted participation (Figure 2). Narrowing in on these

highly localized regions can help SSA precisely pinpoint where to target resources. More broadly, it can help researchers and policymakers better understand the heterogeneity of SSI participation at local levels, including factors such as networking effects that might influence program dynamics and interactions with other programs.

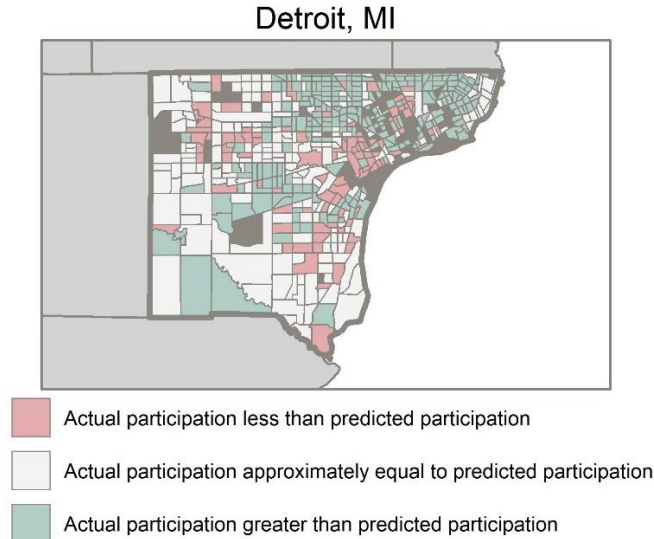Figure 2. *Deviation between actual and predicted youth SSI participation, Census tract example.*

Note: Tracts are characterized as having actual participation greater (less) than predicted participation if deviation is greater than the 75th percentile (less than the 25th percentile). All percentiles are based on the national distribution.

Correlations with deviation. Areas that have a larger share of non-White population have greater deviation (Table 1). Put differently, the larger the share of White people in the local area, the lower is the actual SSI participation relative to predicted participation based on deprivation. This finding is consistent with evidence showing that Blacks are about twice as likely to receive SSI benefits as Whites (Musumeci and Orgera 2021). This measure of the non-White population has the highest standardized coefficient for both geographies, indicating the strongest relationship with deviation.

A variety of other factors are also associated with deviation (Table 1). Deviation increases with the share of the population that has a disability, consistent with the disability criteria for youth to receive SSI. There are notable differences in deviation by region, with areas in the Northeast and the South having higher deviation relative to those in the Midwest and the West. Areas with higher social capital have greater deviation, indicating that places with lower participation in civic, religious, and sports organizations, also do not participate in SSI to the extent that would otherwise be expected based on the level of deprivation.

Table 1. *Characteristics correlation with deviation*

Characteristic	Census tract level		County level	
	Standardized coefficient	*p*-value	Standardized coefficient	*p*-value
Percentage of population that is:				
Non-White	0.332	0.000	0.538	0.000
Has a disability	0.215	0.000	0.409	0.000
Population density	0.009	0.122	0.148	0.007
Social capital	n.a.	n.a.	0.139	0.000
Deprivation percentile	-0.205	0.000	-0.057	0.000
Region (omitted: Midwest)				
Northeast	0.161	0.000	0.172	0.000
South	0.064	0.000	0.072	0.081
West	-0.165	0.000	-0.299	0.000

Note: n.a.=not available. A positive coefficient indicates that the characteristic is positively associated with deviation, so that higher values are associated with larger actual participation than predicted participation.

SSI applications during pandemic (not shown). Counties with higher deprivation had slightly larger declines in SSI applications in 2020. For each additional decile higher deprivation score, SSI applications declined by an additional 0.4 percentage points. Relative to the decline of 17.5 percent, this represents only a 2 percent change. Additionally, areas with greater deviation saw larger declines in SSI applications. Areas that had smaller deviation (or larger negative deviation) likely already had low levels of applications given that predicted participation already exceeded actual participation, and so likely could not decline further.

Conclusion

We find substantive differences in SSI participation across geographic areas even after controlling for economic deprivation. These differences existed prior to the drop in applications associated with COVID-19. By pinpointing specific Census tracts with notably lower SSI than expected, SSA can narrow their outreach efforts. Specific targeting can be especially useful in balancing limited resources. Our work highlights several factors that are correlated with areas that have gaps between predicted and actual SSI participation, such as race, disability prevalence, geography, and social capital. Other important factors could include available services and supports, which vary substantially by region and within county (NASEM 2018).

Though we focus on areas with high deprivation and low SSI participation, it is also important to understand more about areas where actual participation exceeds predicted participation. Perhaps through stronger community ties (such as social capital) and greater

understanding of available programs, people in such areas can take advantage of services and supports available to them. Yet many people do not take up benefits for which they are eligible (Currie 2006). Though these areas have greater actual participation than predicted participation, this is relative to a national average; such areas may still have many youth who are eligible but do not participate in SSI, and thus may also benefit from outreach efforts.

References

Bhargava, Saurabh, and Dayanand Manoli. 2005. "Psychological Frictions and the Incomplete Take-Up of Social Benefits: Evidence from an IRS Field Experiment." *American Economic Review*, 105(11): 1–42.

Currie, Janet. 2006. "The Take-up of Social Benefits." In Public Policy and the Income Distribution, edited by Alan J. Auerbach, David Card, and John M. Quigley, 80–148. New York: Russell Sage Foundation.

Deshpande, Manasi, and Yue Li. 2019. "Who Is Screened Out? Application Costs and the Targeting of Disability Programs." *American Economic Journal: Economic Policy*, 11(4): 213-48.

Hu, Jianhui, Amy Kind, and David Nerenz. 2018. "Area Deprivation Index Predicts Readmission Risk at an Urban Teaching Hospital." *American Journal of Medical Quality*, 33(5): 493–501.

Kind, Amy, Steve Jencks, Jane Brock, Menggang Yu, Christie Bartels, William Ehlenbach, Caprice Greenberg, and Maureen Smith. 2014. "Neighborhood Socioeconomic Disadvantage and 30-Day Rehospitalization: A Retrospective Cohort Study." *Annals of Internal Medicine*, 161(11): 765–774.

Musumeci, Marybeth and Kendal Orgera. 2021. "Supplemental Security Income for People with Disabilities: Implications for Medicaid." Kaiser Family Foundation Brief.

National Academies of Sciences, Engineering, and Medicine. 2018. *Opportunities for improving programs and services for children with disabilities*. Washington, DC: The National Academies Press.

Rupasingha, Anil, Stephan J. Goetz, and David Freshwater. (2006, with updates). "The production of social capital in US counties." *Journal of Socio-Economics*, 35(1): 83–101.

Schmidt, Lucie, and Purvi Sevak. 2017. "Child Participation in Supplemental Security Income: Cross- and Within-State Determinants of Caseload Growth." *Journal of Disability Policy Studies*, 28(3): 131–140.

Singh, Gopal. 2003. "Area Deprivation and Widening Inequalities in US Mortality, 1969–1998." *American Journal of Public Health*, 93(7): 1137–1143.

Wittenburg, David, John Tambornino, Elizabeth Brown, Gretchen Rowe, Mason DeCamillis, and Gil Crouse. 2015. "The Changing Role of the Child SSI Program in the Safety Net." Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.

The Effects of Expanding Access to Mental Health Services on SS(D)I Applications and Awards

Isaac Swensen

Montana State University

Carly Urban

Montana State University and Institute for Labor Studies (IZA)

RDRC Annual Meeting

August 5 & 6, 2021

Background

Nearly half of the 46 million adults suffering from a mental illness in the U.S. are affected by a Serious Mental Illness (SMI). SMI results in serious functional impairments that substantially interfere with or limit one or more major life activities (Ponte, 2019). The burdens of mental illness are particularly concentrated among those who experience disability due to SMI, where individuals are often not able to work and rely heavily upon government disability benefits to make ends meet. At the same time, low mental health treatment rates suggest a need for expanded mental health services. These two prominent efforts to support individuals suffering from SMI—federal disability programs and mental health treatment—may interact in unanticipated ways. Such interactions are the focus of this paper, where we consider whether changing access to mental health treatment services affects participation in federal disability programs including the Supplemental Security Income and the Social Security Disability Insurance (SS(D)I) programs.

Mental Health Services and SS(D)I in the U.S.

While state and federal parity laws for mental health, including the Affordable Care Act, have expanded coverage for mental health services, treatment rates remain low with fewer than half of American adults suffering from mental illness receiving mental health services in 2019 (National Alliance on Mental Health, 2019). A common barrier to low treatment rates is the inability to locate a provider (CBHSQ, 2015). Even after one has identified a provider, wait times at outpatient clinics often span weeks or months (Blech et al., 2017; Steinman et al., 2015); research suggests that longer wait times lead to less favorable outcomes (Steinert et al., 2017).

Supplemental Security Income (SSI) and Social Security Disability Insurance (SSDI) are the two largest programs designed to support individuals with disabilities, with roughly $145 billion of spending on SSDI and $55 billion on SSI in 2020. More than six percent of working-age adults receive SSI or SSDI benefits. The biggest distinguishing factor across the two programs is that SSDI requires that individuals have a sufficient and recent work history in jobs covered by Social Security. For both SSI and SSDI in 2021, those 18-64 would meet the disability definition if they have a medical determinable physical or mental impairment (1) that restricts any substantial gainful activity to less than $1,310 per month and (2) has lasted or can be expected to last for a continuous period of at least 12 months.

Labor Market Implications

Mental health has far-reaching labor market implications and the ability for individuals and households to earn sufficient income. Kessler et al. (2008) estimate that those with SMI had annual earnings roughly $16,000 less than otherwise similar respondents, resulting in a societal-level total losses of $193 billion. Mental illness is also one of the leading causes of sickness absences in most high-income countries. A potential way to increase labor market participation and reduce reliance on SS(D)I for those suffering from SMI could be to provide better access to mental health services. On the other hand, additional access to mental health treatment may increase the likelihood of proper diagnoses of SMI, which could increase the take-up of disability programs. Our paper considers these possibilities by examining the effect of expanded access to mental health on SS(D)I program participation.

What We Do

We examine how expansions in office-based mental health establishments affect participation in the Social Security Administration (SSA) programs that support individuals with disabilities: SSI and SSDI. Our data come from counties across the U.S. and include the number of office-based mental healthcare providers---or single physical location. We also use administrative data on the number of prime-aged (18-64) SS(D)I applications and awards for 2010—2016. Intuitively, our analysis compares SS(D)I applications and awards after a change in a county's number of mental health establishments. The figure below highlights the counties in which our data allows us to identify expansions and contractions of local mental health offices. This figure further shows the areas that experienced expansions and contractions in office-based mental health establishments from 2010 through 2016.
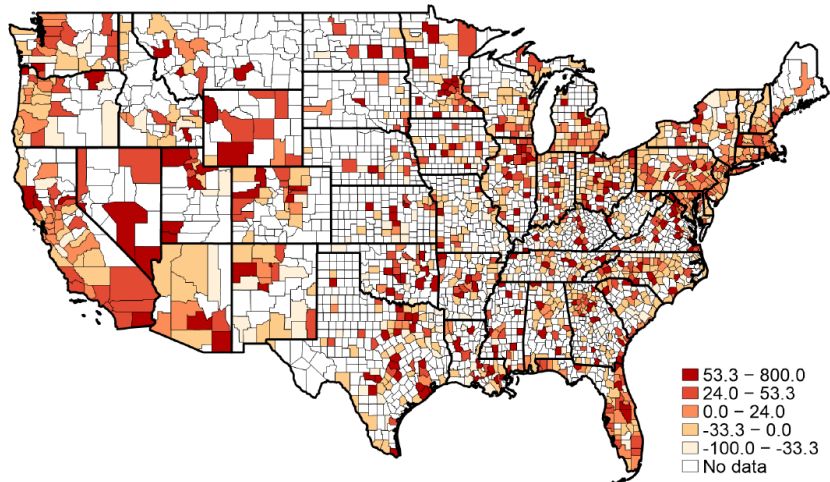
Figure 1: The maps show the percentage change in the number of office-based mental health facilities in each county from 2010 through 2016. Data were obtained from the U.S. Census Bureau's County Business Patterns and facilities were identified using the following North American Industry Classification Codes: offices of physicians, mental health specialists (621112) and offices of mental health practitioners except physicians (621330).

We posit two potential ways that additional mental health services may impact SS(D)I program participation. Since bottlenecks leading to long wait times, reduce access to mental health resources, additional availability of appointments may foster mental health. This expanded treatment could allow individuals to obtain and maintain employment, reducing participation in SS(D)I. Alternatively, additional access may increase proper diagnoses of SMI and increase the take-up of disability programs.

Findings

Our findings indicate that an increase in availability of mental health facilities *increases* participation in SS(D)I programs. **Overall, a 10 percent increase in the number of office-based mental health establishments in the county increases the SSI application rate by 1.2 percent and increases the SSDI application rate by 0.7 percent.** In counties with populations that have lower household income, less educated, and a higher proportion of residents below the poverty line, we see that the effects on SSI and SSDI applications are larger and awards also increase. Since these less affluent counties are the most likely to have populations that struggle with SMI, may have fewer job prospects that accommodate SMIs, and have earnings consistent with SSI eligibility, these findings suggest that mental health resources are an important link to benefits that may greatly assist with individuals' necessary expenses.

While the effect of additional establishments on SSI awards is not statistically different from zero on average, we find evidence that additional office-based mental health facilities that have physicians (as opposed to other mental health professionals), increase both SSI applications and awards. This provides some evidence that receiving treatment from a medical doctor may be an important mechanism for proper diagnosis and successfully completing the SSI application process—at least in the relatively short-run.

Conclusion

Our research documents that increased access to office-based mental health facilities increases the rate of SS(D)I participation in a county. The effects are even larger among counties with less affluent populations, where we find that the increased rate of applications translates into higher rates of SSI awards. These findings suggest that increasing access to mental health resources can be a pathway through which people suffering from severe mental illness are properly diagnosed and access the safety net.

Early evidence suggests that the COVID-19 pandemic had dire effects on the mental health of Americans. One statistic in particular suggests a 1,000 percent increase in emergency hot-line calls from people in emotional distress. To the extent that some of the mental illness suffered has long-term consequences, the results from this study suggest that additional resources to address these mental health strains may simultaneously increase applications for federal disability benefits.

While exit from SS(D)I programs are rare, Moore (2015) finds that after individuals lost SSDI eligibility in 1996 when drug and alcohol addictions were no longer listed as qualified conditions, those with two to three year SSDI spells were able to later work at much higher rates. Recent evidence also suggests that access to treatment can eliminate a large share of the earnings penalty associated with some mental illnesses (Biasi et al., 2019). As such, it remains possible that individuals suffering from mental illness may have higher likelihoods of working after a few years of SS(D)I and continuous treatment for the illness. Future work should consider the ways in which mental health treatment facilities can help individuals transition off of disability benefits and back into the workforce.

References

Biasi, B., Dahl, M. S., & Moser, P. (2021). Career effects of mental health. *National Bureau of Economic Research Working Paper. 290311.*

Blech, B., J. C. West, Z. Yang, K. D. Barber, P. Wang, and C. Coyle (2017). Availability of network psychiatrists among the largest health insurance carriers in washington, dc. *Psychiatric Services 68*(9), 962–965.

CBHSQ (2015). Behavioral health trends in the united states: Results from the 2014 national survey on drug use and health. *HHS Publication No. SMA 15-4927, NSDUH Series H-50*.

Kessler, R. C., S. Heeringa, M. D. Lakoma, M. Petukhova, A. E. Rupp, M. Schoenbaum, P. S. Wang, and A. M. Zaslavsky (2008). Individual and societal effects of mental disorders on earnings in the united states: results from the national comorbidity survey replication. *American Journal of Psychiatry 165*(6), 703–711.

Moore, T. J. (2015). The employment effects of terminating disability benefits. *Journal of Public Economics 124*, 30–43.

Ponte, K. (2019). People with mental illness can work. Technical report, National Alliance on Mental Illness.

Steinert, C., K. Stadter, R. Stark, and F. Leichsenring (2017). The effects of waiting for treatment: A meta-analysis of waitlist control groups in randomized controlled trials for social anxiety disorder. *Clinical Psychology & Psychotherapy 24*(3), 649–660.

Steinman, K. J., A. B. Shoben, A. E. Dembe, and K. J. Kelleher (2015). How long do adolescents wait for psychiatry appointments? *Community mental health journal 51* (7), 782–789.

Cash vs. Food?
How Does Food Stamp Eligibility Affect the Family Security of SSI Recipients?

Marianne Bitler
University of California, Davis and NBER

Amelia Hawkins
Brandeis University

Lucie Schmidt
Smith College and NBER

Hilary Seligman
University of California, San Francisco

Introduction

Supplemental Security Income (SSI) has provided means-tested cash assistance for the elderly, blind, and individuals with disabilities since its inception in 1974. At that time, states could choose either to make recipients eligible for Food Stamps (FS, now known as the Supplemental Nutrition Assistance Program, or SNAP) or to make recipients ineligible for FS and "cash out" those FS benefits by supplementing the Federal SSI benefit. Five states initially adopted the cash out option California, Massachusetts, Nevada, New York, and Wisconsin. All except California transitioned to automatic FS eligibility for SSI recipients by 1992. In 2019, California ended its cash out policy and made SSI recipients eligible for SNAP benefits.

While there is an active debate in economics about whether recipients use food benefits in the same way as cash, we know very little about how states' decisions to cash out food benefits for SSI recipients affected FS take up and the well-being and economic security of SSI recipients. Access to FS for SSI recipients could be particularly important, given that the elderly and individuals with disabilities face relatively high rates of food insecurity (e.g., Ziliak and Gundersen 2019), and much research shows that FS reduces food insecurity.[1]

In this project, we study the effects of the cash out policy - making SSI recipients ineligible for FS but providing a cash out SSI payment - on FS participation, food security and economic well-being. We first analyze the relationship between states' initial decisions regarding cash out status and program participation, food security, and economic well-being in 1974 using the Survey of Low Income Aged and Disabled (SLIAD), a survey of low-income elderly and individuals with disabilities conducted before and after the implementation of SSI in 1974. We then examine the end of cash out which made SSI recipients eligible for FS.

Food Stamps and Supplemental Security Income

The modern Food Stamp program began as a pilot in a few counties in 1961, where families were provided with coupons which enabled them to acquire food ingredients (but not prepared foods). Counties could later seek to participate in FS, although the Program's block grant structure and other factors affected implementation timing across counties.

The 1974 introduction of Supplemental Security Income created a fully-federal cash assistance program in the US for the first time, replacing previously existing state programs (funded through federal grants-in-aid) for the elderly (Old Age Assistance (OAA), the blind (Aid

---

[1] See Hoynes and Schanzenbach (2016) for a review of the literature.

to the Blind (AB)), and individuals with disabilities (Aid to the Permanently and Totally Disabled (APTD)). SSI provided recipients with a monthly cash benefit, and in most states, access to health insurance through Medicaid.

Prior to the introduction of SSI, most recipients of OAA, AB, and APTD would have been categorically eligible for FS in counties where the Food Stamp Program was in place. Counties were mandated to universally implement FS by July 1974 (although some counties were allowed to delay)[2], corresponding closely in time with SSI's introduction. However, take up of FS among welfare recipients was significantly less than 100 percent. When SSI was implemented, states were given the option to either administer FS to SSI recipients, or to increase supplemental cash SSI payments to recipients. Five states (California, Massachusetts, Nevada, New York, and Wisconsin), chose the latter option, which "cashed out" FS benefits to SSI recipients (an additional $10 per month) and made SSI recipients ineligible for FS.[3] While SSI recipients in non-cash out states would have been automatically eligible for FS, those in cash out states would have either lost Food Stamp eligibility entirely, or their FS unit would have had to remain eligible after excluding the SSI recipient and their income from the FS unit, and their unit would have had to satisfy the purchase requirement.

Why Did States Choose/End Cash Out?

The state programs for the elderly and those with disabilities that were replaced by SSI varied widely in their benefit generosity (Goodman-Bacon and Schmidt 2020). The legislation that created SSI therefore included provisions meant to ensure that beneficiaries already on these programs in high benefit states would not be made worse off by the move to the new federal SSI benefit level. States used their SSI State Supplementation Program (SSP) to pay the difference for these individuals between the new, lower federal SSI amount and the old, higher state program amount in these states. In addition, states were not required to contribute more toward the cost of their SSP than they had contributed to their state-run programs for the aged, blind and those with disabilities during 1972. Therefore, the federal government paid the difference between the cost of the new supplementary payment, and what the state had spent in 1972 (Cannon 1976, Arnold and Marinacci 2003). In these five cash out states the cost of

---

[2] Among non-cash out states (on an annual basis), 85.9% of counties (weighted by county population) had implemented FS by some point in 1973, 95.8% by some point in 1974, and 99.8 % by some point in 1975.

[3] This $10 amount was based on an average bonus value in January 1972 and not subject to a cost-of-living-adjustment (Lyle 1976).

supplementing the SSI payment up to the previous benefit level equaled or exceeded the states'
required payments so the federal government paid the additional costs (including the cost of
cashing out Food Stamps) to hold states harmless (CQ Almanac 1988).

States could only maintain their cash out status as long as the federal government was
contributing to the cost of the SSP through the "hold harmless'" provision. As beneficiaries on
disability benefit rolls before 1974 fell off the rolls and Federal SSI benefit levels rose, New
York, Nevada and California were projected to no longer receive hold harmless payments and
thus be no longer eligible for cash out status. On July 1, 1976 New York and Nevada ended their
cash out status (Whittier 1976). A 1976 amendment allowed California to keep cash out status
although the amendment required California to pass through the cost-of-living adjustments to
Federal SSI benefit levels onto SSP recipients and to add cost-of-living adjustments to its SSP
(Arnold and Marinacci 2003). The first of these two new cash out requirements was extended to
Massachusetts and Wisconsin in 1981. At that point, a state could cash out FS benefits so long as
it had cash out status in December 1980 and continued without interruption to pass through cost-
of-living increases in Federal SSI benefits to SSP recipients. Massachusetts ended cash out and
reduced their SSP by $10 on October 1, 1981, and Wisconsin followed suit on January 1, 1992.
California remained a cash out state until June 2019.

Data

To examine historical changes in food stamp status for SSI recipients, we begin with the
Survey of Low Income Aged and Disabled (SLIAD), a survey conducted by the Social Security
Administration. Approximately 18,000 low-income aged, blind, and adults with disabilities were
interviewed in 1973 immediately prior to SSI implementation, and again in 1974 after SSI had
been in place for about a year. We use data on aged individuals and those with disabilities who
received welfare benefits under the OAA, AB, and APTD programs in 1973. These data include
state indicators, program participation measures, information about food consumption and
expenditures, health measures, and indicators of economic well-being.

Next, we use the Food Stamp Quality Control (QC) data from 1975-1996 to examine how
the end of states' cash out policies affected food stamp take-up rates and benefit levels among
SSI recipients' FS units and households. These data are sampled from FS administrative
enrollment records to be nationally representative of FS units, and contain monthly information
on eligibility determination, as well as SSI receipt and income. We use the QC data to create the

numerator for our take-up rate. We construct state by month counts of Food Stamp units and households that also contain SSI recipients. The denominator of our take-up rate variable comes from the Social Security Administration's Annual Statistical Supplement which reports the number of persons receiving Federally-administered SSI benefits by state in December of each year. We also use the QC data to look at the average FS benefit amount received in SSI households. Households in which all the members received SSI would not have been eligible for FS before the end of the cash out policy. Households in which some but not all of the members received SSI would have had their FS eligibility and benefit amount redetermined when the SSI recipient(s) were added back into the FS unit when the cash out policy ended.

Results - SLIAD

Table 1 presents difference-in-difference estimates of the effect that states' initial cash out decisions made on FS participation and food security. Column 1 shows the effect of cash out status with no controls and Column 2 adds controls for demographics (respondent sex, race, age, and whether they had a disability (those without disabilities are elderly)) and health conditions.[4] Those in cash out states were 39 percentage points less likely to report FS participation in 1974, after SSI was implemented, relative to 1973 as compared to the non-cash out states, on a baseline mean of 46.2%.

Table 2 examines food security, health, and economic outcomes. Columns 1-2 show that respondents in cash out states were 4 percentage points more likely to answer "only some of the time" or "never" when asked "Do you generally get enough to eat?" on a baseline mean of 8.3%. A second question asked respondents "Do you feel you are eating the right kinds of foods?" Columns 3-4 show that respondents in cash out states were 5 percentage points less likely to answer "always" or "most of the time" on a baseline mean of 74.0%. We see no significant effects of cash out status on poor self-reported health or on reporting that the respond can't make ends meet, but Columns 7-8 show that respondents in cash out states were 8 percentage points more likely to report being worried about finances after the implementation of SSI.

Results – QC Data

---

[4] Regressions are run only on the subsample of states that had APTD/OAA benefits greater than the federal SSI benefit and therefore did not see an increase in disability benefits with the introduction of SSI (Goodman-Bacon and Schmidt 2020).

We next use the QC data to examine how ending cash out made a difference in FS take up and benefits among SSI recipients. Figure 1 graphs SSI recipients' FS unit take-up rate before and after Nevada, New York, Massachusetts, and Wisconsin ended their cash out policy. Before the end of cash out in these four states there were, by definition, no FS units with SSI recipients. Figure 1 and our difference-in-difference results in Table 3 show a large increase in FS take up after the end of cash out in each state. For each state Column 1 shows the effect of ending cash out with no controls; Column 2 controls for the state-year unemployment rate, the maximum AFDC benefit for a family of three and the fraction of the year under an AFDC waiver; and Column 3 drops all other cash out states. Starting in 1983, the QC data records SSI receipt for household members excluded from the FS unit. In Figure 2 and Table 4 we look at the effects of Wisconsin's end to cash out on SSI recipient households (as opposed to FS units). Figure 2 Panel A and Table 4 Columns 1-3 suggest that after ending cash out, the FS take-up rate rose among SSI recipient households by at least 19 percentage points. We next examine how the FS benefit amount received by SSI households changed with the end of cash out in Wisconsin. When cash out ended in 1992, SSI recipients would have lost the additional $10 in their SSI SSP and their households may have gained or lost FS benefits. In Figure 2 Panel B and Table 4 Columns 4-6, we find that the average FS benefit amount received by FS households with an SSI recipient fell by about $100 (1992) dollars when cash out ended reflecting both a change in the composition of SSI households receiving FS and the change in the benefit formula SSI households faced.

Conclusion and Ongoing Work

Our results suggest that FS eligibility for SSI recipients matters. States' initial cash out status significantly affected FS participation at the start of SSI, and SSI recipients in cash out states were less food secure than recipients in non-cash out states. The end of cash out status in Wisconsin in 1992 significantly increased FS participation among SSI recipients.

In ongoing work, we are examining differences in health outcomes in cash out versus non-cash out states, both at the start of SSI in 1974, as well as when states ended cash out status. We are also examining California's 2019 policy change, linking administrative SNAP data to Medicaid administrative data and other data. We are using these data to examine SNAP take up among SSI recipients overall and at the county level. Using the Medicaid claims data, we will examine how FS take-up rates vary as a function of SSI recipients' past health, and how take up varies depending on the expected increase in transfer benefits.

References

Arnold, Autumn and Amy Marinacci (2003). "Cash-Out in California: A History of Help and Harm: An Analysis of California's Food Stamp "Cash-Out" Policy for Recipients of SSI/SSP." San Francisco, CA: California Food Policy Advocates.

Cannon, Jim (1976). "Memorandum for the President Subject: Enrolled Bill H.R. 14514 - Cashout of food stamps for Supplemental Security Income (SSI) beneficiaries in California Sponsor - Rep. Corman (D) California." In *Box 52, folder "8/9/76 HR14514 Cashout of Food Stamps for Supplemental Security Income Beneficiaries in California."* White House Records Office: Legislation Case Files at the Gerald R. Ford Presidential Library.

CQ Almanac (1988). "Food Stamp Eligibility." In *CQ Almanac (43rd ed 545 ed.).,* Washington, DC. Congressional Quarterly.

Goodman-Bacon, Andrew and Lucie Schmidt (2020). "Federalizing Benefits: The Introduction of Supplemental Security Income and the Size of the Safety Net." *Journal of Public Economics* 185: 104174.

Hoynes, Hilary W. and Diane W. Schanzenbach (2016). "US Food and Nutrition Programs." In R. M. Moffitt (Ed.), *Economics of Means-Tested Transfer Programs in the United States, Volume 1*. Chicago, IL: University of Chicago Press.

U.S. Congress. Senate Special Committee on Aging (1976). "Statement of Marilyn Lyle, Food Research and Action Center New York, N.Y.." In *Hearing Before the Special Committee on Aging.* US Senate Ninety-third Congress Second Session, August 1, 1974.

US Congress House Committee on Agriculture (1976). "Testimony of Summer G. Whittier, Acting Director, Bureau of Supplemental Security Income for the Aged, Blind, and Disabled." In *Hearings, Reports and Prints of the House Committee on Agriculture*. U.S. Government Printing Office.

Ziliak, James and Craig Gundersen (2019). "The State of Senior Hunger in America 2017: An Annual Report." Washington, DC: Feeding America.

Tables and Figures

Table 1: SLIAD Effects of Starting Cash out on FS Participation for SSI Recipients

	(1) FS Participation	(2) FS Participation
Cash out	-0.389***	-0.394***
	(0.129)	(0.121)
Control variables	N	Y
Observations	3,780	10,149
R-squared	0.113	0.140

Notes: Regressions from the SLIAD. Sample includes only non-binding states (states that did not experience an increase in benefit level when SSI was introduced). Control variables include demographics (gender, race, age and age squared, education level, number of children, whether the individual was from the disabled sample) and health conditions in 1973 (mental illness, respiratory conditions, circulatory conditions, cancer, diabetes, digestive issues, and arthritis). Robust standard errors in parentheses.
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2: SLIAD Effects of Starting Cash out on Food Security, Health, and Economic Outcomes for SSI Recipients

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Not Enough Food	Not Enough Food	Ate Right Food	Ate Right Food	Poor Health	Poor Health	Worry about Finances	Worry about Finances	Can't Make Ends Meet	Can't Make Ends Meet
Cash out	0.039*	0.043*	-0.055**	-0.054**	0.019	0.020	0.080***	0.085***	0.035	0.040
	(0.020)	(0.021)	(0.020)	(0.023)	(0.012)	(0.012)	(0.027)	(0.027)	(0.045)	(0.048)
Control variables	N	Y	N	Y	N	Y	N	Y	N	Y
Observations	3,402	3,389	3,396	3,383	3,356	3,343	3,395	3,383	3,383	3,371
R-squared	0.002	0.011	0.003	0.007	0.000	0.009	0.005	0.009	0.001	0.008

Notes: See notes from Table 1.

Table 3: QC Effects of Ending Cash out for Disability Benefit Recipients' FS Unit Take-up Rate

|	(1) Nevada	(2) Nevada	(3) Nevada	(4) New York	(5) New York	(6) New York
Cash out	0.256***	0.268***	0.260***	0.271***	0.274***	0.254***
	(0.025)	(0.026)	(0.027)	(0.025)	(0.031)	(0.028)
Control variables	N	Y	Y	N	Y	Y
Drops other cash out states	N	N	Y	N	N	Y
Observations	165	165	150	165	165	150
R-squared	0.549	0.554	0.616	0.550	0.555	0.602
	(7) Massachusetts	(8) Massachusetts	(9) Massachusetts	(10) Wisconsin	(11) Wisconsin	(12) Wisconsin
Cash out	0.205***	0.217***	0.205***	0.257***	0.259***	0.259***
	(0.021)	(0.039)	(0.040)	(0.007)	(0.008)	(0.008)
Control variables	N	Y	Y	N	Y	Y
Drops other cash out states	N	N	Y	N	N	Y
Observations	417	417	381	5045	5045	4649
R-squared	0.342	0.344	0.372	0.132	0.134	0.139

Notes: The numerator of the take-up rate is the weighted number of FS units with an SSI recipient taken from the Food Stamp Quality Control data. The denominator of the take-up rate is number of persons receiving federally-administered SSI in December and taken from the SSA Annual Statistical Supplements. Panels within 56 months of the end of cash out. Controls include state-year unemployment rate, the maximum AFDC benefit for a family of three, and the fraction of the year the state had a AFDC waiver in place. Robust standard errors in parentheses. $***p < 0.01, **p < 0.05, *p < 0.1$

Table 4: QC Effects of Ending Cash out for Disability Benefit Recipients' Household FS Take-up Rate and Average FS Benefit in WI

|	(1)	(2)	(3)	(4)	(5)	(6)
				Average FS	Average FS	Average FS
	FS	FS	FS	Benefit	Benefit	Benefit
	Households	Households	Households	Amount	Amount	Amount
	Take-up Rate	Take-up Rate	Take-up Rate	($1992)	($1992)	($1992)
Cash out	0.186***	0.189***	0.188***	-102.501***	-102.656***	-101.699***
	(0.007)	(0.008)	(0.008)	(1.097)	(0.955)	(0.882)
Control variables	N	Y	Y	N	Y	Y
Drops other cash out states	N	N	Y	N	N	Y
Observations	5045	5045	4649	5038	5038	4642
R-squared	0.124	0.126	0.128	0.099	0.105	0.100

Notes: The numerator of the take-up rate (Columns 1-3) is in weighted number of FS households with an SSI recipient taken from the Food Stamp Quality Control data. The denominator of the take-up rate is number of persons receiving federally-administered SSI in December and taken from the SSA Annual Statistical Supplements. Panels within 56 months of the end of cash out. Controls include state-year unemployment rate, the maximum AFDC benefit for a family of three, and the fraction of the year the state had a AFDC waiver in place. Robust standard errors in parentheses. $***p < 0.01, **p < 0.05, *p < 0.1$

Figure 1: QC Disability Benefit Recipients' Unit FS Take-up Rate Over Time and By State
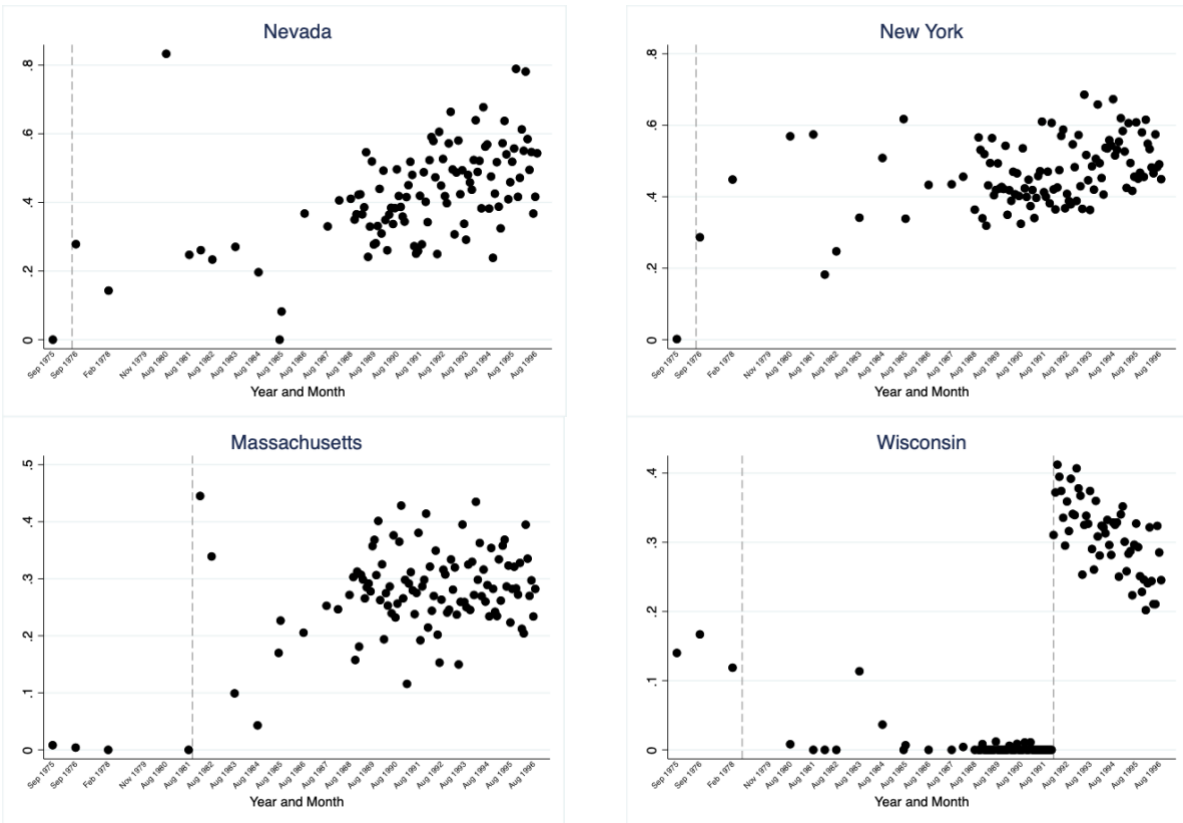
Notes: This figure plots disability benefit recipients' FS unit take-up rate by month. The numerator of the take-up rate is the weighted number of FS units with an SSI recipient taken from the Food Stamp Quality Control data. The denominator of the take-up rate is number of persons receiving federally-administered SSI in December and taken from the SSA Annual Statistical Supplements. The vertical line indicates the month in which each state ended its cash out policy. Wisconsin suspended its cash out policy between September 1975 and July 1978.

Figure 2: QC Disability Benefit Recipients' Household FS Take-up Rate and Average FS Benefit
Over Time in Wisconsin

Panel (A) FS Households Take-up Rate

Panel (B) Average FS Benefit Amount
($1992)
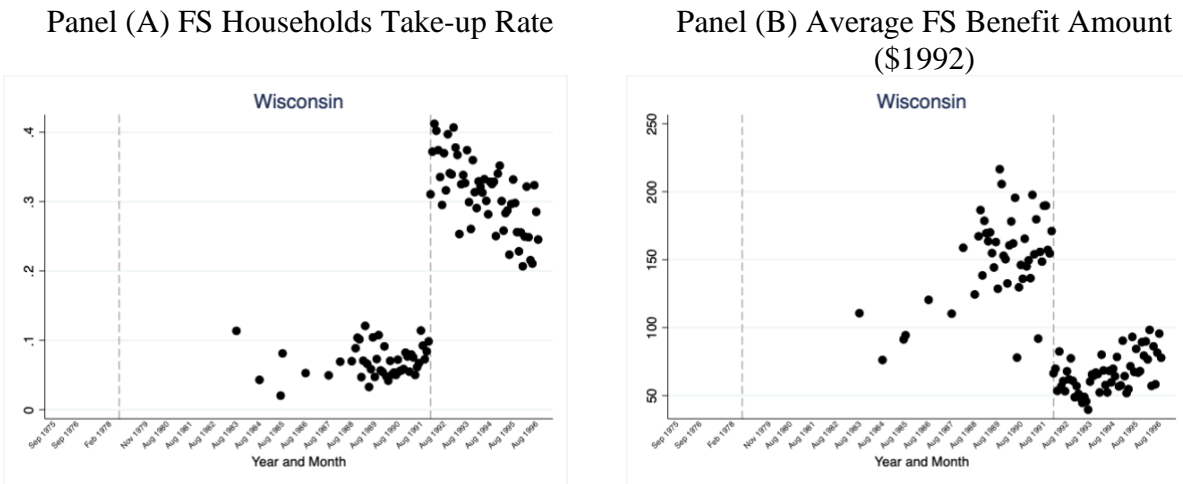
Notes: Panel A plots disability benefit recipients' FS unit take-up rate by month. The numerator of the take-up rate is the weighted number of FS households with an SSI recipient taken from the Food Stamp Quality Control data. The denominator of the take-up rate is number of persons receiving federally-administered SSI in December and taken from the SSA Annual Statistical Supplements. Panel B plots the weighted monthly average FS benefit amount in 1992 dollars among households with SSI recipients. The vertical line indicates the month in which each state ended its cash out policy. Wisconsin suspended its cash out policy between September 1975 and July 1978.

Panel 3: Retirement Planning and Preparedness

Moderator: Jason Fichtner (Bipartisan Policy Center)

"Efficiency in Household Decision Making: Evidence from the Retirement Savings of US Couples" **Taha Choukhmane** *(MIT Sloan), Lucas Goodman (US Treasury) and Cormac O'Dea (Yale)*

"Explanations for the Decline in Spending at Older Ages" **Michael Hurd**, *Péter Hudomiet and Susann Rohwedder (RAND)*

"How Do Households Adjust When Their Kids Leave Home?" *Andrew Biggs (American Enterprise Institute),* **Anqi Chen** *and Alicia Munnell (Center for Retirement Research at Boston College)*

Individual-level vs. Household-level Responses
to Incentives in U.S. Retirement Savings Plans

Taha Choukhmane   Lucas Goodman   Cormac O'Dea

MIT Sloan of Management   U.S. Dept. of the Treasury   Yale University

Prepared for the 24th Annual Meeting of the Retirement and Disability Research

Consortium August 5 & 6, 2021

Section 1: Introduction

Most households are formed of multiple people. To study their decision-making, economists must take a stand on how different members of the same household resolve their conflicting desires. In this paper, we ask whether married couples coordinate their financial decisions or if they make their choices independently of each other. We do this by studying the retirement-savings decisions of individuals in couples. In the U.S., employer matching contributions, are provided at the *individual* level. Yet, the decision of whether and how much to contribute to a retirement savings plan may be affected by the incentives and saving decisions at the *household* level.

Nearly two-thirds of U.S. civilian workers have access to an employer-sponsored retirement saving plan (Myers and Topoleski, 2020), and 86% of these plans offer an employer match (Arnoud et al., 2021). Match schedules vary substantially across employers, which creates an ideal laboratory to study whether couples are coordinating their financial decisions. For instance, if one spouse has a dollar-for-dollar employer match up to a cap, and the other spouse has a 50 cents-on-the-dollar match on their retirement contributions, then the efficient allocation at the household level is to fully exploit the match offered to the first spouse before making any contribution to the second spouse's account.

To study this issue, we build a new data set which brings together employer retirement plan matching schedules and employee retirement savings decisions. Section 2 describes this data. Section 3 outlines are method. Section 4 gives our results. Section 5 concludes.

Section 2: Data

To study whether married couples allocate their individual retirement contributions in a way that efficiently exploits the match incentives available at the household level, we create a new data set of the characteristics of employer-provided retirement plans covering a majority of those in employer-provided Defined Contribution (DC) plans in the US. We link this employer data to administrative records on the retirement saving choices of employees. Our employer data is generated by hand-coding the details found in narrative plan descriptions of regulatory filings provided by 4,200 of the largest DC retirements plans in the US, covering over 44 million eligible

employees. Our employee data comes from individual and household tax returns (primarily the W2 forms). Because contributions to these retirement accounts are generally tax-deferred, they must be reported every year to the tax authorities.

Table 1 gives summary statistics of the individuals in our sample. For a couple to be in our sample, four conditions must hold: i) the couple must file a tax return, ii) both spouses are employed, iii) both spouses have access to a DC plan and at least one must contribute and iv) both spouses must be in plans for which we have coded employer retirement plan data. This leaves us with a sample that is large (approximately 1.3 million couples) though one that is not necessarily representative of the US population. Table 1, which gives some summary statistics, illustrates this. It shows that couples in our sample have median income which is, at $112,000, almost twice the level of median income couple of US population.

Table 1: Summary statistics on our sample

	Mean	**Median (rounded)**
Income	$149,936	$112,000
Age	45.57	56
Duration of Marriage	12.15 years	14 years

Section 3: Empirical Approach

Our empirical approach is straightforward and can be described as follows:

1. Using the tax data on individual, we obtain the level of retirement saving done by each member of each couple in our sample. This is 'pre-match' saving.

2. Using this, and our knowledge of the match schedules that these couples faced, we calculate the 'post-match saving' that this 'pre-match saving' yields.

3. We then calculate the minimum 'pre-match saving' that the couple would have needed to do to achieve their chosen 'post-match' saving. This is 'optimal pre-match saving'

4. We define 'lost saving' as the difference between 'pre-match saving' (calculated in step 1) and 'optimal pre-match saving' (calculated in step 3). If 'lost saving' is positive for any couple, this is evidence that they do are not fully coordinating their retirement contributions.

Section 4: Results

We find that approximately 25% of couples in our sample fail to exploit a within-period intra-household arbitrage condition. That is, these couples could have achieved the same retirement wealth while saving less simply by reallocating existing contributions from the account of the spouse with a lower marginal match incentive to the account of the spouse with a higher marginal matching incentive. The roughly 75% of couples who do not fail this efficiency test are not necessarily coordinating their retirement saving contributions: they may just happen to (independently) choose individual contributions that are consistent with household-level efficiency.[1]

To provide a benchmark against which to compare the observed incidence of inefficient allocations to the potential level under a no-coordination alternative, we generate placebo samples which involve using our data to generate placebo (i.e., fake) couples. In these synthetic couples---in which there is (by construction) no coordination between synthetic spouses---we find that roughly 40% of couples fail to exploit the arbitrage opportunity. Relative to these benchmarks, our finding of 25% of true couples leaving some employer match on the table suggests that while some couples seem to coordinate (i.e. non-coordination is 15 percentage points lower in the true sample than in the placebo sample), a substantial share of couples do not coordinate when making their retirement saving contributions.

In some cases the costs of this non-cooperation are small, but the mean and median levels of lost savings conditional on failing to exploit the intra-household arbitrage opportunity are substantial, respectively, at \$749 and \$360 per year. These numbers represent sizeable shares of the resources households dedicate to retirement saving: mean and median lost savings are, respectively, 14% and 8% of the total employee retirement contributions made by the household.

---

[1] Not every couple will have an arbitrage opportunity to exploit in the region of their chosen wealth accumulation. For example, both could be fully exploiting their employer match, or there could be other reasons why the marginal match rate available does not differ across spouses

Section 5: Discussion and Conclusion

Having documented that many couples do not coordinate their retirement savings contribution, we next explore the mechanisms driving the lack of coordination among spouses. Non-coordination could emerge either because spouses' actions are individually inefficient (for instance, because of behavioral biases or the cost of making adjustments to retirement accounts), or because decisions are individually efficient but not coordinated at the household level (for instance, due to a failure of commitment). We investigate the extent to which each of these channels might be driving the results that we find.

We show that our results cannot be explained by simple behavioral biases such as remaining at the auto-enrollment default, contribution inertia, or simple saving heuristics. The incidence of non-coordination is similar in magnitude when looking only at couples who have been hired without auto-enrollment. We also rule out the ability of contribution inertia to explain the savings patterns we document by focusing on a sample of those who make active decision to change their retirement saving. We graph the change in `lost saving' for this population in Figure 1. The proportion of couples whose *active* decision increases the quantity of 'lost' savings is as large as the proportion of couples whose active decision reduces it. Finally, simple saving heuristics (such as equal contribution rates or amounts across spouses) cannot explain our findings.

Figure 1: Change in 'Lost Saving' when making an active decision
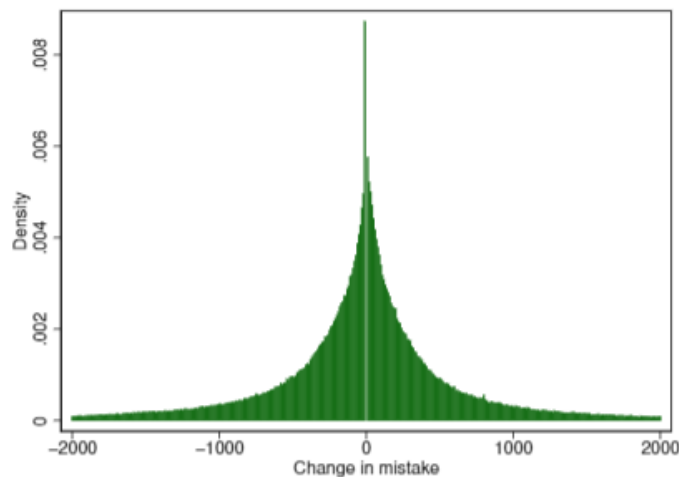
We do, however, find evidence that non-coordination is (at least partly) driven by a lack of cooperation inside the household. We document that the extent to which individuals respond to their own incentives (by bunching at their employer's matching threshold) is unaffected by the potentially larger incentives available to their spouse. This suggests that savers respond to the incentives available to them individually but do not respond to the incentives available at the household level. We also find that plausible proxies of the strength of marital commitment improve the efficiency of household decisions. We find that the likelihood of failing to coordinate falls with the length of marriage and with the presence of a child or a mortgage, and it is higher for couples who we know will subsequently divorce. We interpret these results as a failure of spouses to cooperate efficiently.

We take two broad lessons from our results. The first relates to retirement saving. A large share of US couples are not effectively exploiting the incentives that their matches provide at the household level. Essentially they are saving more than they need to do to achieve the level of wealth that we observe them doing. This has important implications for their retirement wealth accumulation and living standards in retirement. The second relates to the modelling of decision-making at the household level. Most economic models of household decision-making assume that the members of couples cooperate. Our results are suggestive of a role for non-cooperative models in the study of households' economic decisions.

References

Arnoud, A., T. Choukhmane, J. Colmenares, C. O'Dea, and A. Parvathaneni (2021). "The evolution of U.S. firms' retirement plan offerings: evidence from a new panel data set." Technical report, Yale University.

Myers, E. A. and J. J. Topoleski (2020). "Worker participation in employer-sponsored pensions: Data in brief." Technical report, Congressional Research Services.

How Do Households Adjust Their Saving After Children Leave Home?

Andrew Biggs, Anqi Chen, and Alicia H, Munnell
Center for Retirement Research at Boston College

Introduction

Whether parents adjust their savings and consumption after their children leave home has important implications for our understanding of retirement adequacy. Life-cycle savings studies suggest that people are saving optimally (Scholz and Seshadri 2006, 2008). On the other hand, studies based on the assumption of steady consumption over the working years conclude that many households will end up unprepared for retirement (Mitchell and Moore 1998; Munnell, Orlova, and Webb 2013). Assumptions about how consumption changes after children leave have an important effect on estimates of retirement preparedness. Munnell, Rutledge, and Webb (2014) show that differences in the treatment of children explain about half of the difference in the estimates of the percent of households with inadequate savings.

Several studies have tried to examine empirically which of these two theories better describes household behavior once children leave but have not answered the question. Biggs (2019), for example, found that parents decrease their consumption more than non-parent households at older ages, suggesting that parents may be increasing their savings. At the same time, Dushi et al. (2016), using W-2 tax data, found that parents did not increase their 401(k) contributions after their children became financially independent. If households are both consuming less but not saving more after their children leave, the question that arises is where are the resources going?

One potential way to square the circle is recognizing that 401(k) accounts are not the only way for households to save; parents could be saving by paying down their mortgage or other forms of debt after their children leave home. Another possible explanation is that typical measures of consumption do not capture all the ways that households expend their resources – parents could continue to provide financial support for their children by helping with down payments or paying off student loans. A broader definition of consumption that includes financial transfers might suggest that parents are not reducing consumption after children leave. Finally, parents may also opt for more leisure, and, as a result earn less after their children become independent, which could produce a decline in consumption and no increase in saving.

Reconciling the seemingly conflicting findings will help shed light on whether household are saving enough for retirement.

Data and Methodology

The primary analysis of the paper uses data from the 1992-2018 wave of the *Health and Retirement Study* (HRS), linked to administrative earnings and Social Security benefits data. Since the HRS only includes households where at least one spouse is age 50 or over, we supplement the analysis with 1992-2017 panels of the *Panel Study of Income Dynamics* (PSID) to check whether the behavior of younger parents is similar. In both the HRS and the PSID, our sample consists of households who stay single or married throughout the observation period, have worked for pay at some point, and are between the ages 35 and retirement.

The event of interest, in relation to consumption and retirement saving, is the point at which children become financially independent. This can be hard to determine since financial independence is often a process and can look different for each child. Nonetheless, our analysis examines when all children become independent, using three alternative definitions from Dushi et al. (2015). The first definition only considers whether children are physically living at home. However, college students are often not living at home but are still dependent on their parents. So, the second definition includes both children who are living at home or are away at school. The third definition adjusts the second definition by categorizing children who go back to school after moving out (graduate students) as independent.

The analysis uses fixed-effect regressions to examine whether broader measures of saving, broader measures of consumption, or changes to work and income can explain why it appears parents are both consuming less yet savings remain flat after children leave home.

Results

Better Measure of Saving

One reason for the seemingly conflicting behaviors is that retirement accounts are not the only ways that households can save; parents could also be paying off their mortgage or other forms of debt. The fixed-effect results show that, for all three definitions of financial independence, parents do not seem to be adjusting their mortgage payments after their children become independent (Figure 1).

Figure 1. *Fixed-effect Regression of Annual Mortgage Payments for Households with a Mortgage*
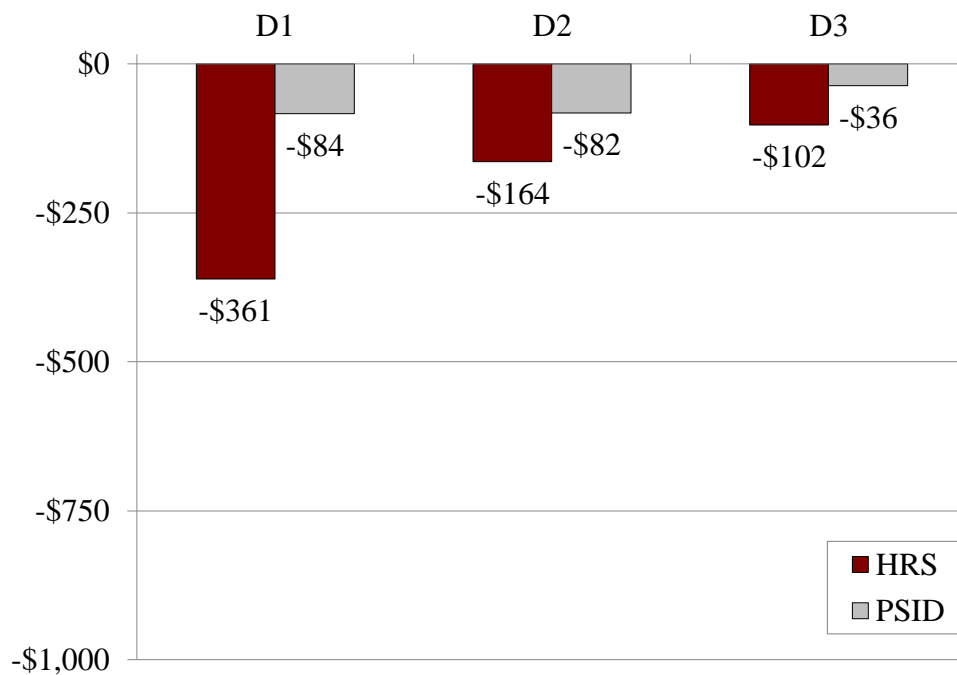
Note: Solid bars are significant at the 10 percent level or above.
Source: Authors' illustration.

However, since the *HRS* is only conducted every two years, looking just at mortgage payments may not capture ad-hoc payments that households may be putting towards their house. To address this possibility, we examine changes in mortgage debt before and after children become independent and find that parents are not paying off their mortgage faster through ad-hoc payments either. Finally, even if households are not paying down mortgage debt, they could be paying down other forms of debt, but we found no evidence of that either.

In short, savings outside of retirement accounts does not explain why parents are reducing consumption yet not saving.

*Broader Measure of Consumption*

Another reason why consumption (narrowly defined) decreases and saving does not increase after children leave is that parents may still provide financial transfers for their children after they become financially independent.[1] Since traditional measures of consumption do not

---

[1] It is important to note financial transfers in this paper includes tuition payments.

capture financial transfers, studies using consumption surveys might miss the continued financial expenditures parents take on behalf of their children, such as helping with rent, paying off student debt, or providing a down payment for a house. Interestingly, the results show that parents are actually reducing transfers to children after they become independent (Figure 2).

Figure 2. *Fixed-effect Regression of Net Transfers to Children*
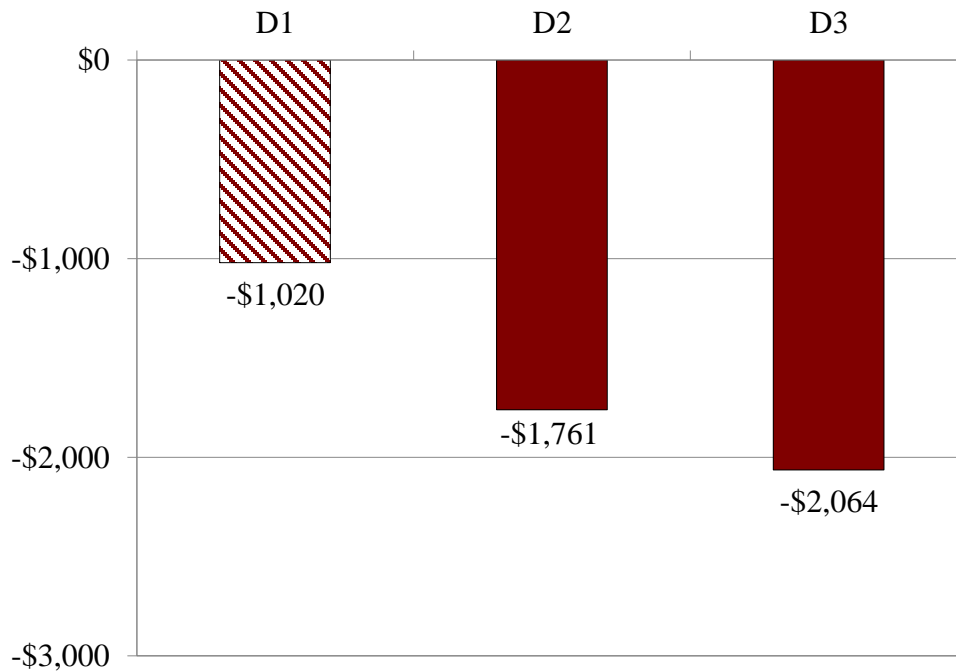
Note: Solid bars are significant at the 10 percent level or above.
Source: Authors' illustration.

Parents may not be sending their children money after they leave home, but children may be leaving home just as grandparents have additional care needs. To see if parents may be caring more for aging grandparents, we examine total transfers to all relatives and also found a decrease after children leave.

In short, continued support to children does not appear to solve the apparent conflict between declining consumption (narrowly defined) and the lack of addition saving once children leave home.

64

Hours Worked and Earnings

The only remaining option to square the circle, one that has not been explored in the literature, is that parents may opt for more leisure and less work after their children leave home. To examine this possibility, we look at both hours worked as well as total household earnings from administrative earnings data.

Figure 3. *Fixed-effect Regression of Total Household Income*

Note: Solid bars are significant at the 10 percent level or above.
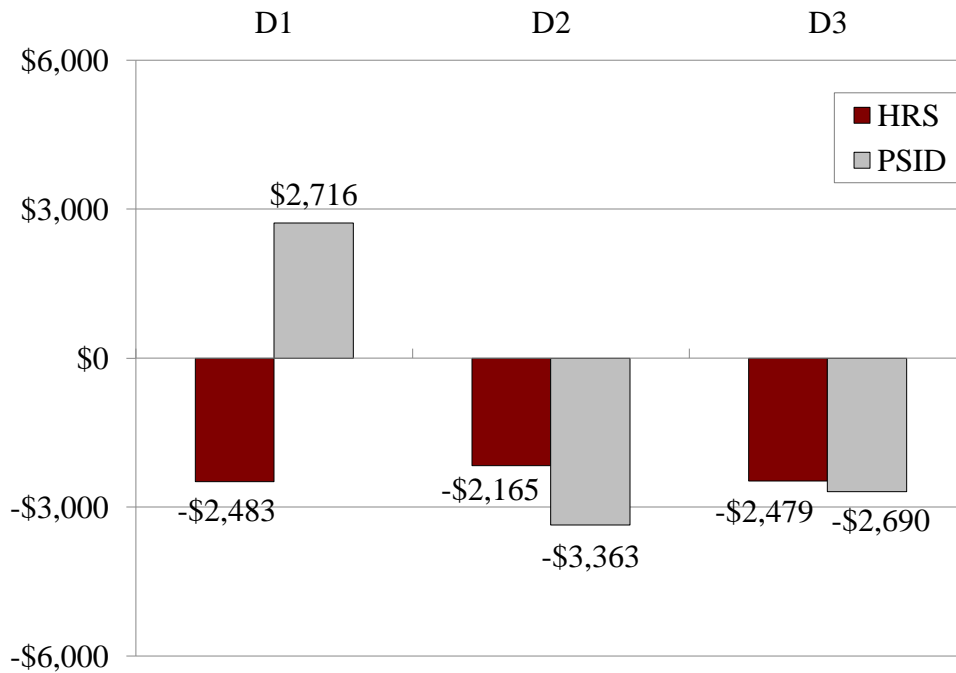*Source:* Authors' illustration.

The results show that parents work between 1-2 hours less per week, resulting in a $2,000 - $3,000 decrease in income annually.

What Does This Mean for Savings?

The implications for savings of parents opting for more leisure is not obvious. A decline in income by itself would suggest lower savings but our results confirm that consumption (both narrowly and broadly defined) is also decreasing. So, the effect on savings will depend on how much parents reduce consumption relative to income. The results show that consumption relative to income decreases by 6 percent after children leave. A decline in consumption relative

to income should result in more savings and greater net worth. However, household net worth to income ratios do not increase. There are a few potential reasons why parents seem to be reducing consumption more than income but we observe no changes to savings or net worth. First is that we defined financial independence as when all children have moved out and finished school, however, parents may have begun adjusting consumption and saving as each child gains some levels of independence. Second, while we observe parents for an average of 8-10 years between children leaving and retirement, we may not fully capture the behavior of younger parents. Finally, changes in net worth not only depend on savings but market conditions, which is not considered in the current analysis. While the analysis does not completely resolve the apparent conflicting behaviors, understanding that a third dimension – changes in income – is at play can help future research on the topic.

References

Biggs, Andrew G. 2019. "How Do Children Affect the Need to Save for Retirement?" AEI Economics Working Paper 2019-23. Washington, DC: American Enterprise Institute.

Coe, Norma B. and Anthony Webb. 2010. "Children and Household Utility: Evidence from Children Flying the Coop." Working Paper 2010-16. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Mitchell, Olivia S. and James F. Moore. 1998. "Can Americans Afford to Retire? New Evidence on Retirement Saving Adequacy." *Journal of Risk and Insurance* 65(3): 371-400.

Munnell, Alicia H., Anthony Webb, and Luke Delorme. 2006. "A New National Retirement Risk Index." *Issue in Brief* 48. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Munnell, Alicia H., Matthew S. Rutledge, and Anthony Webb. 2014. "Are Retirees Falling Short? Reconciling the Conflicting Evidence." Working Paper 2014-16. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Dushi, Irena, Alicia H. Munnell, Geoffrey T. Sanzenbacher, Anthony Webb, and Anqi Chen. 2015. "Do Households Increase Their Savings When the Children Leave Home?" Working Paper 2015-26. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun. 2006. "Are Americans Saving 'Optimally' for Retirement?" *Journal of Political Economy* 114(4): 607-643.

Panel 4: Public Understanding of Social Security Programs and Service, and Vulnerability to Fraud

Moderator: Marguerite DeLiema (University of Minnesota)

Mixed-methods Study to Understand Use of MySSA
Lila Rabinovich *and Francisco Perez-Arce (University of Southern California)*

Epidemiologic Study of the Correlates of Scam Susceptibility, Financial Exploitation, and Fraud in Older Adults
Patricia Boyle, *Lei Yu (Rush University) and Gary Mottola (FINRA)*

Improving Public Understanding of OASI: An Experimental Approach
Sebastian Jilke, *Pamela Herd and Donald Moynihan (Georgetown University)*

Mixed-methods study to understand use of the *My Social Security* online platform

Lila Rabinovich and Francisco Perez-Arce

Center for Economic and Social Research

University of Southern California

Prepared for the 23rd Annual Meeting of the Retirement and Disability Research

Consortium August 5 & 6, 2021

Introduction

My Social Security (MySS) is a key online resource offered by the Social Security Administration. It provides users with a single point of access to all SSA electronic services and allows them to obtain information about their own SSA benefit entitlements, including their earnings history and personalized estimates of future benefits. Users are also able to conduct a number of operations online such as requesting replacement documents or applying for benefits.

In principle, this is an accessible and useful tool that can save users a significant amount of time. Yet the number of people with a *MySS* account remains low. According to the most recent data from a biannual representative survey of Americans' Social Security literacy, only 33.6% have heard of *MySS* and only 62% among them have set up an account. Americans could use this tool for many purposes including to learn about what they can expect in terms of retirement benefits. Our survey shows that 63% of adults in the United States feel that they are not knowledgeable about what their retirement benefits will be.

To our knowledge, there is no research yet on the low level of engagement with *MySS* in the population. We conducted a mixed-methods study to examine barriers to use of *MySS*, and users' experience of *MySS*. Ultimately, the study aims to provide insights into priorities for increasing *MySS* penetration and optimizing its use in the population.

Approach

To address our research questions, we designed a mixed-methods study. In phase 1 (Analysis of existing data) we leveraged existing data from surveys administered through the Understanding America Study[1], a nationally representative internet household panel. These surveys measure respondents' Social Security literacy, including awareness and use of *MySS*, as well as internet literacy and respondents' online habits. We use the quantitative data to analyze the determinants of *MySS* account usage and for recruitment of the qualitative interview sample.

For phase 2 (Qualitative data collection) recruited UAS participants to form a diverse sample in terms of internet literacy, current usage of *MySS* and Social Security beneficiary status. During the interviews, participants were asked about their prior interactions with Social Security, online habits, and prior experience with *MySS*. Participants were then asked to log into, or create, a *MySS* account and answer a series of questions about navigating various elements within it.

---

[1] https://uasdata.usc.edu/index.php

All interviews were recorded and transcribed verbatim for analysis. We conducted a thematic analysis of the transcripts using an inductive and deductive approach, with codes generated both from a review of the transcripts and from the study's research questions and aims. Our study received ethics approval by USC's Institutional Review Board.

Quantitative Results

Using the latest survey, fielded in March 2020, we find that 79% of U.S. adults have never used *MySS,* while 21% have used it at least once. Among users, we find that just under half (44%) have only conducted one activity on the platform. *MySS* users are more likely to be older, more educated, have high levels of internet literacy, and be recipients of Social Security benefits. Gender is not correlated with *MySS* account status.

To account for confounders that may be correlated with the determinants of *MySS* usage, we estimated regression models that account for all these variables at once. We first estimate probit models, where the independent variables are age, gender, and education level, as well as internet literacy and beneficiary status. We also estimate linear models with the same independent variables, with number of *MySS* activities as the dependent variable.

We find that, by far, the strongest predictor for both having an account and the number of activities conducted is being a Social Security beneficiary. On average, beneficiaries conduct 0.23 more activities than non-beneficiaries, compared to a baseline of 0.42. Internet literacy and education levels are also important determinants of account ownership and usage. Younger individuals are less likely to use *MySS* than older ones, even after controlling for beneficiary status.

Qualitative Sample description

Appendix 1 presents some basic characteristics of our qualitative sample. As intended, our sample was evenly split between individuals with and without a pre-existing *MySS* account, and individuals below and above median internet literacy. The resulting sample included a majority of individuals receiving Social Security benefits (n = 15), although just under half of beneficiaries in our sample (seven out of the 15) did not have a *MySS* account prior to the interview.

Qualitative results

Several important themes emerged from the interviews. First, participants discussed their online habits, such as online banking or shopping, which can help us frame their views of *MySS* in the broader context of their overall internet-based activities. All of our participants use the Internet to participate in the UAS online panel, from which they were recruited, but even within the UAS

70

we find diverse views on conducting transactions online. The majority of our participants reported at least some online transactions. Both users and non-users of online services said that privacy and security concerns were important and that there are risks, but more avid users also argued that those risks are inevitable. As one participant said: "I think there's a compromise. Yes, I'm concerned about the level of security, but at the same time I think it's a necessary thing" (Interviewee 23 - male, aged 67).

Those who did not use online shopping and banking had two main reasons: first, security and privacy concerns, and second, low internet or computer literacy. For instance, one participant said: "I still believe in keeping cash in my pocket. [I only use computers to] look at Facebook, communicate with my family... I'm really not too good on them. (Int. 17 - female, aged 71).

In addition to privacy concerns and low internet or computer literacy, participants without a *MySS* account prior to the interview cited two other reasons for not having engaged with the platform before. First, some participants noted a lack of awareness of the platform: "When I got married, I had to change my name legally on my [Social Security] card – but I physically went to the office. I did not know that online was an option. If I knew, I would have done it." (Int. 25 - female, aged 43). Second, some individuals did not consider it necessary to create an account because they had no need (yet) for the information and services available on the platform. One participant said: "I kind of want to see where my benefits are as it gets closer. I want to see [...] how much longer I have to work. [...] Knowing myself I won't do it until I'm like 55 and 10 years from retirement" (Int. 27 - male, aged 31).

Through the experiential portion of the interview we found that, while for some participants creating the account or logging into an existing account was straightforward and quick, for others (including some with a pre-existing account) the process was more fraught. Issues included the need to receive a security code by text message or email, which was confusing to some participants; loss of access to registered email accounts; complex ID requirements, and others. Three participants' attempts to log in to *MySS* were ultimately unsuccessful (an additional participant decided not to proceed with creating an account during the interview).

Among those who were able to access their account (20 participants), the majority reported satisfaction with the layout and visual aspects of the site. Overall, participants expressed a preference for the sober style of *MySS* over more 'bells and whistles' as they may find on commercial websites. Participants were asked to find specific items of information on the site,

71

such as benefits eligibility information or requesting a verification letter or replacement documents. When asked to rate how easy or difficult it was to find the information, most rated it 1 or 2 on a scale of 1-5 (with 1 being very easy to find and 5 being not at all easy to find).

Participants also said that most of the information and transactions that individuals can conduct on the platform, such as the meaning of basic benefit eligibility information, application links, and how to replace documents, were straightforward and clear. Nevertheless, some of our pre-retirement participants were dissatisfied with the information available in two areas: (1) the interaction between benefits and pensions; and (2) the interaction between spousal/survivor benefit and retirement benefits. For this type of information, participants reported wanting a clear way to estimate optimal claiming behavior, which they did not feel the platform afforded them: "They explained to me that [..] if I'm gonna get more money from myself or it's just gonna be about the same as me getting it from [retirement or] survivor benefits. So that's exactly what I'm interested in now. [...] I actually don't see where it just says that here" (Int. 26 - female, aged 62).

Finally, participants found the information on the platform to be relevant to themselves. Non-retirees, in particular, appreciated the retirement benefit information, some of which was a surprise to them. One participant, for instance, did not realize that his full retirement age was 67 (he had assumed it was 65). Another only realized he qualified for Social Security benefits while checking his account during the interview. A few others said the benefit amounts indicated in the benefits estimator on the platform were lower than what they had expected. One participant said: "You can see the difference in the benefit amount, as you start thinking about if you want to retire earlier in life or later in life. It'll definitely make me think about my financial situation…. Putting some money aside in some sort of a retirement account … [I]f I were to retire at full retirement age at 67, it gives me my benefit amount, and that is not quite nearly enough to survive on" (Int. 29 - male, aged 31). In a similar vein, another participant noted: "When I see the verbiage right away, 'Your spouse's decision on when to begin this benefit can impact the amount of their spousal benefit.' So, then I'm thinking "oh my gosh, she's five years older. What is that going to do to me if she is going to retire earlier?" It kind of makes me go "oh, you know, I need to really look into that." [It's] just a little bit of a reality check" (Int. 27 - female, aged 43).

Retirees, on the other hand, felt it was good to have access to *My Social Security* but did not really need it as much once they started receiving their benefit payments. Some participants, especially older ones, said they would like to see more information resources for financial

wellbeing on the platform. A few of the retirees who did not have *MySS* prior to the interview said the platform would have been helpful to them as they started getting ready to retire.

Conclusions

Our mixed-methods exploration of experiences with *MySS* yield revealing results. The quantitative analysis suggests that Internet literacy and, more generally, education levels, are barriers to use of *MySS*. This is important since groups with low education may benefit most from the information available through *MySS*. This analysis also suggests that people learn about *MySS* primarily when they become beneficiaries and, as a result, users tend to be older. But younger groups being more Internet-literate, they are well-placed to take advantage of the platform and, as our qualitative results suggest, could benefit from *MySS* as an input into financial planning.

From the qualitative results we learn, first, that there may be four key reasons for not creating a MySS account: (a) lack of awareness of *MySS*; (b) no relevance/need; (c) security and privacy concerns; (d) low Internet/computer literacy. We also observe that, overall, the *MySS* platform is perceived to be clear, navigable and relevant. Non-retired, non-beneficiary participants found the information to be instructive and useful. Retirees appreciated but did not have as much use for the platform - although some noted it would have been a useful resource as they began getting ready to retire and file for benefits.

One of the most interesting suggestive implications of our findings is that for younger people especially, *MySS* could be a potentially useful retirement preparedness tool. We had 15 non-retirees in our sample (although this included some people receiving other benefits). Our interviews provide suggestive evidence that *MySS* could help address some behavioral barriers to retirement preparedness, such as procrastination, overconfidence, and limited attention, as well as lack of knowledge, by prompting individuals early and clearly about retirement preparedness, and providing a salient negative shock to misinformation or miscalibrated expectations.

A related finding is that a key challenge to the use of *My Social Security* is not about the retention of users once they create an account – since participants seem broadly happy about how the platform works - but rather about the initial capture of users – i.e., getting people to create an account in the first place. Further research may therefore be warranted on how to address the barriers to entry to *MySS*, and how to realize its potential as a key resource to support retirement readiness and general retirement and Social Security-related financial literacy in non-beneficiary populations.

Appendix 1: Qualitative sample characteristics

Table 1: Qualitative sample characteristics

Characteristics	No. (total sample = 24)
Female	**11**
Average age	**59**
Age range	**27-81**
SSA benefits	
Retirement	**9**
SSDI/SSI	**5**
Other	**1**
Non-beneficiary	**9**
Education	
High school or less	**5**
Professional/Associate/Some College	**10**
Bachelors or above	**9**
MySS prior to interview	**12**
Low Internet literacy	**12**

Epidemiologic study of aging, scam susceptibility, and financial exploitation

Patricia Boyle, PhD (Rush Alzheimer's Disease Center, Rush University Medical Center), Lei Yu, PhD (Rush Alzheimer's Disease Center, Rush University Medical Center), and Gary Mottola, PhD (FINRA Foundation)

Prepared for the 24th Annual Meeting of the Retirement and Disability Research Consortium
August 5 and 6, 2021

Introduction

Older adults are highly vulnerable to scams and other forms of financial exploitation, with approximately 20% of individuals >65 victimized(1-8). Elder fraud results in considerable financial losses (possibly in excess of $35 billion annually), and these losses will undoubtedly rise with the increasingly sophisticated targeting of individuals receiving Social Security distributions. Moreover, the public health costs are tremendous; exploitation leads to anxiety, depression, social isolation, hospitalization, and early mortality(9-14). Indeed, federal agencies including the CDC have prioritized elder fraud as a major public health problem in need of immediate and intense focus(8).

To date, the reasons why older adults are vulnerable to scams and exploitation remain unclear. Our epidemiologic study of aging leverages a neuroscientific approach and highly unique data available via an ongoing cohort study of aging to address critical gaps in knowledge regarding the factors associated with decision making, scam susceptibility, and financial exploitation among older adults without dementia. Findings will provide much needed knowledge regarding the factors associated with elder vulnerability and exploitation and will facilitate efforts to reduce the associated economic and public health challenges.

The work presented at the RDRC conference focuses largely on age-related changes in financial and health literacy and associated adverse financial and health impacts. Financial and health literacy involves the acquisition, processing and utilization of financial and health information to facilitate effective financial and health decisions. Alarming evidence suggests that older adults are highly vulnerable to poor financial and health literacy, with a significant proportion failing to understand basic concepts of compound interest, inflation or mutual funds(15,16). Older adults also lack financial sophistication in areas such as risk diversification, asset valuation, and portfolio choice(17). Similarly, many older adults lack the fundamental health literacy necessary to maneuver the current healthcare environment. The high prevalence of inadequate health literacy is widely observed among community-based individuals(18). In an American Medical Association report, approximately a third of English-speaking and separately over a half of Spanish-speaking Medicare enrollees in managed care programs had inadequate or only marginal health literacy(19).

Low financial and health literacy have major implications for the overall wellbeing of older adults. Older persons with poor financial and health literacy tend to make suboptimal financial and healthcare decisions and are more susceptible to financial scams(20-25). Further, low financial and health literacy is associated with poor mental health, including social isolation and depression(26,27). Notably, research on the impacts of financial and health literacy to date has relied almost exclusively on cross-sectional data. Emerging evidence suggests that financial and health literacy is not static and may change across the lifespan, particularly in aging(28). An important question is whether the consequences of inadequate financial and health literacy in old age are driven primarily by low starting levels of literacy, age-related declines in literacy, or both.

To address this knowledge gap, we examined age-related change in financial and health literacy and associated impacts on decision making, scam susceptibility, and wellbeing. We hypothesized that starting levels (i.e. financial and health literacy accumulated through earlier life experiences) and rates of decline (i.e. age-related deteriorations over time) vary across individuals, and both are important determinants of adverse outcomes. These hypotheses build on overwhelming cross-sectional findings from our program of research that link poor financial and health literacy to adverse outcomes as well as prior evidence of declining literacy in old age. Specifically, we investigated the extent to which declining financial and health literacy were associated with subsequent decision making performance, scam susceptibility and psychological wellbeing, above and beyond the effects of starting level of literacy.

METHODS

The main study included 1,046 older persons from the Rush Memory and Aging Project (MAP). MAP (please see reference 29 for deals). In order to estimate person-specific change in financial and health literacy over time, the analyses were restricted to participants with at least 2 literacy assessments and who were not demented by the first literacy assessment. Participants were followed annually for up to 10 years (Mean: 4.8 years, SD: 2.9).

Details on the measure of financial and health literacy (predictor) and our relevant outcomes measures are described in the paper(29). Financial literacy was assessed via 23 items adapted from the Health and Retirement Study. In brief, 12 items assessed financial and institutional knowledge, 9 items assessed numeracy, and the remaining 3 items assessed the skill that

combines both financial knowledge and numeracy in the context of investment returns. The financial literacy score was the percentage of the 23 items that were answered correctly. Health literacy was assessed via 9 items that measure knowledge of health information and concepts. The questions were tailored to aging population and focused specifically on Medicare, following prescription instruction, flu vaccination, leading causes of heart disease and stroke, and determining drug risk. Similar to financial literacy, the health literacy score was the percentage of the 9 items that were answered correctly. The present study used a composite score to examine the change in financial and health literacy over time, which is the average of financial and health literacy scores.

A 12-item performance-based measure was used to assess financial and health decision making, as previously described(29). The instrument wasa designed to simulate real world situations in choosing mutual funds (financial decision making) and HMO plans (health decision making). The assessment of health decision making follows a similar structure.

Scam susceptibility was assessed via responses to five statements that indicate vulnerability to scams according to findings from the AARP and the Financial Industry Regulatory Authority Risk Meter(29). Specifically, participants rated, on a 7-point Likert scale, their likelihood of (1) answering and (2) ending a phone call from a stranger/telemarketer; (3) listening to sales pitches from a telemarketer; and whether they agree on the statement that (4) if something sounds too good to be true, it usually is, and (5) older persons are often targeted by scammers.

An 18-item instrument was adapted from Ryff's Scales of Psychological Well Being, as previously described(29). Participants rated, on a 7-point Likert scale, their agreement to each item. Six different aspects of psychological wellbeing were assessed, which include self-acceptance, autonomy, environmental mastery, purpose in life, positive relations with others, and personal growth.

Statistical analysis

To investigate longitudinal change in financial and health literacy, we fit a linear mixed effects model with annual financial and health literacy scores as the longitudinal outcome. Time in years since baseline was the predictor, and the corresponding coefficient estimates the mean annual rate of change in financial and health literacy (i.e. the mean slope). The random slopes

from the model estimated the deviation of individual slopes of change from the mean slope. As a result, these random slopes represent adjusted person-specific rates of change in financial and health literacy.

To examine the influence of change in financial and health literacy on the measures of decision making, scam susceptibility and psychological wellbeing, we fit a series of linear regression models. In these models, the slopes of change in financial and health literacy, estimated using the data from baseline up until the last decision making assessment, was the primary predictor. The measures of financial and health decision making, scam susceptibility and psychological wellbeing at the last assessment were the continuous outcomes. Each outcome was modelled separately. All regression models were controlled for age, sex, education, income, as well as the baseline level of financial and health literacy.

SUMMARY OF RESULTS AND CONCLUSIONS

Results showed that financial and health literacy declines over time among most (but not all) community-dwelling older adults. The average rate of decline was relatively modest but declining literacy had important impacts. In particular, declining financial and health literacy was associated with subsequent decision making performance (in both financial and health domains), scam susceptibility, and psychological wellbeing. These new findings extend prior research on the impact of financial and health literacy in several important ways.

First, these findings greatly extend a very limited literature on change in financial and health literacy in old age. Prior evidence of change in literacy relied heavily on either cross-sectional data on persons of different age groups or differences in performance between only two time point. Repeated measures of financial and health literacy assessment on the same individuals (as used here) are required to robustly estimate longitudinal change in financial and health literacy and document age-related declines in literacy. Second, the present study expands prior work to document a range of consequences associated with declining literacy, including increased scam susceptibility and a critically important mental health outcome, psychological wellbeing. Wellbeing is a multidimensional construct that refers to the sense that one is striving, emotionally connected and balanced, and generally functioning well mentally. Wellbeing is related to multiple psychological and health outcomes in old age yet has not been a focus of

literacy studies. This greatly expands our understanding of the health consequences of declining literacy and suggests that it affects domains of functioning not previously considered. Third, this study disentangles the influence of longitudinal decline in financial and health literacy from that of starting level of literacy. While cross-sectional data are crucial in evaluating the impact of financial and health literacy on important outcomes, an important limitation is that the level and change are confounded. Financial and health literacy are strongly influenced by life experience factors such as education, occupation and contextual factors like systemic racism and sexism, and these factors greatly influence performance at a single point in time. Thus, the wide individual differences observed in financial and health literacy could simply be reflective of a longstanding and preexisting discrepancy between different demographics, rather than an age-related deterioration. Our results show that the association of declining financial and health literacy with subsequent outcomes was above and beyond the starting level of literacy. More importantly, the strength of associations with all three outcomes (i.e. financial and health decision making, scam susceptibility and psychological wellbeing) are stronger for decline than level, suggesting that age-related declines in literacy have the most potent impact on key outcomes. These results highlight the importance of identifying and possibly slowing or reversing age-related decline in financial and health literacy.

Finally, the present study underscores the critical need for efforts to maintain or even improve financial and health literacy among older persons. Evidence suggests that educational programs (e.g. eHealth literacy intervention) that boost understanding of financial and healthcare concepts are well received by recipients and have positive effects on real-life financial and healthcare actions. Importantly, our findings suggest that the benefits of such interventions also may extend to decision making, financial exploitation, and even psychological functioning. Thus, targeted efforts to increase both the availability and usability of literacy interventions for older adults hold the potential to offer considerable finanical and public health benefit and should be prioritized.

REFERENCES

1. True Link Financial. Elder Financial Abuse (2015). In: Pooled Special Needs Trust Best Practices. San Francisco, CA: True Link Financial.

2. American Association of Retired People (1996). Telemarketing fraud and older Americans: An AARP study. Princeton Survey Research Associates.

3. FINRA Investor Education Foundation (2007). National Risk Behavior Study, Washington, DR: FINRA Foundation. Accessed at https://www.saveandinvest.org/sites/default/files/FINRA-Foundation-Senior-Fraud-Risk-Survey-August-2007.pdf November 1, 2018.

4. FINRA Investor Education Foundation (2013). Financial Fraud and Fraud Susceptibility in the United States, Washington, DC: FINRA Foundation. Accessed at FINRA.org November 1, 2018.

5. National Research Council Elder Mistreatment: Abuse, Neglect and Exploitation in an Aging America. National Academies Press, Washington, DC (2003).

6. Burnes D, Henderson CR, Sheppard C, Zhao R, Pillemer K, Lachs MS: Prevalence of financial fraud and scams among older adults in the United States: a systematic review and meta-analysis. Am J Public Health. 2017;107(8):1295.

7. Centers for Disease Control: accessed at https://www.cdc.gov/features/elderabuse/index.html June 1, 2018.

8. Acierno R, Hernandez MB, Amstadter AB, et al. Prevalence and correlates of emotional, physical, sexual, and financial abuse and potential neglect in the United States: the National Elder Mistreatment Study. Am J Public Health. 2010;100(2): 292–297.

9. Dong X. Medical implications of elder abuse and neglect. Clin Geriatr Med. 2005;21:293–313.

10. Burnett J, Jackson SL, Sinha AK, et al. Five-year all-cause mortality rates across five categories of substantiated elder abuse occurring in the community. J Elder Abuse Negl. 2016;28(2):59-75.

11. Dong XQ, Simon M, Mendes de Leon C, et al. Elder self-neglect and abuse and mortality risk in a community-dwelling population. JAMA. 2009;302(5):517–526.

12. Lachs MS, Williams CS, O'Brien S, Pillemer KA, Charlson ME. The mortality of elder mistreatment. JAMA. 1998;280:428–432.

13. Cooper C, Selwood A, Blanchard M, et al. Abuse of people with dementia by family careers: representative cross sectional survey. BMJ. 2009;338:b155.

14. Bennett DA, Buchman AS, Boyle PA, Barnes LL, Wilson RS, Schneider JA. Religious Orders Study and Rush Memory and Aging Project. J Alzheimers Dis. 2018;64(s1):S161-S189.

15. Baker DW, Gazmararian JA, Sudano J, et al: The association between age and health literacy among elderly persons. The journals of gerontology. Series B, Psychological sciences and social sciences 2000; 55:S368-374

16. Lusardi A,Mitchell OS: Financial literacy and planning: Implications for retirement wellbeing, National Bureau of Economic Research, 2011
17. Lusardi A, Mitchell OS,Curto V: Financial literacy and financial sophistication in the older population. Journal of pension economics & finance 2014; 13:347-366
18. Sudore RL, Mehta KM, Simonsick EM, et al: Limited literacy in older people and disparities in health and healthcare access. Journal of the American Geriatrics Society 2006; 54:770-776
19. Gazmararian JA, Baker DW, Williams MV, et al: Health literacy among Medicare enrollees in a managed care organization. Jama 1999; 281:545-551
20. Scott TL, Gazmararian JA, Williams MV, et al: Health literacy and preventive health care use among Medicare enrollees in a managed care organization. Medical care 2002; 40:395-404
21. Wood S, Hanoch Y, Barnes A, et al: Numeracy and Medicare Part D: the importance of choice and literacy for numbers in optimizing decision making for Medicare's prescription drug program. Psychology and aging 2011; 26:295-307
22. Braun RT, Barnes AJ, Hanoch Y, et al: Health Literacy and Plan Choice: Implications for Medicare Managed Care. Health literacy research and practice 2018; 2:e40-e54
23. Lusardi A,Mitchell OS: Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. Journal of monetary Economics 2007; 54:205-224
24. James BD, Boyle PA,Bennett DA: Correlates of susceptibility to scams in older adults without dementia. Journal of elder abuse & neglect 2014; 26:107-122
25. Engels C, Kumar K,Philip D: Financial literacy and fraud detection. The European Journal of Finance 2020; 26:420-442
26. Wolf MS, Gazmararian JA,Baker DW: Health literacy and functional health status among older adults. Archives of internal medicine 2005; 165:1946-1952
27. Bennett JS, Boyle PA, James BD, et al: Correlates of health and financial literacy in older adults without dementia. BMC geriatrics 2012; 12:30
28. Kobayashi LC, Wardle J, Wolf MS, et al: Cognitive function and health literacy decline in a cohort of aging English adults. Journal of general internal medicine 2015; 30:958-964
29. Yu L, Mottola G, Bennet DA, Boyle PA. Adverse impacts of declining literacy in old age. American Journal of Geriatric Psychiatry 2021; epub ahead of print.

Improving Public Understanding of OASI: An Experimental Approach

Donald Moynihan, Sebastian Jilke, Pamela Herd
Georgetown University

Prepared for the 24th Annual Meeting of the Retirement and Disability Research
Consortium August 5 & 6, 2021

Introduction

Social Security represents the most durable and popular American redistributive program, enjoying rare bipartisan support. However, many are skeptical about whether they will receive benefits. The 2019 Old Age Security Income (OASI) Trustees Report (SSA 2019) estimates that by 2034, OASI trust funds will be depleted. Half of individuals aged 51–64 say they worry a great deal about the solvency of the fund (Singletary 2019). While Social Security does face funding shortfalls, popular belief in the most dire scenarios is not justified. The worst-case scenario is that benefits would be cut by about twenty-five percent, and policymakers face both legal obligations and strong political pressures to ensure these cuts don't occur (SSA 2020). Social Security therefore faces a gap between perceptions people hold of the ability of OASI to deliver on its popular mission and a more positive reality.

As most people do not closely track their retirement, such erroneous impressions about the health of the program may displace more careful consideration of their actual financial health. Among those aged 65 and older, Social Security represents the majority of the income for half of married couples and 70% of unmarried persons (SSA 2021). Thus, beliefs about the health of the program are likely to be highly salient to people's worries about retirement security, especially those with low expectations or financial literacy (Armour 2020). Policy feedback research from political science points to the importance of public beliefs about programs, including Social Security, to their sustainability (Campbell 2002).

The prevalence of negative beliefs about the longevity of the OASI represents a form of negativity bias in the public sector, where there is asymmetric attention to bad news (James, Olsen, Moynihan and Van Ryzin 2020). In this study we examine if informational nudges can help. We contrast the effect of different informational frames on understanding of the program and its longevity across a nationally representative sample. Our control group is provided basic information about OASI. Our "status quo" treatment group includes information based on how Social Security communicates about the shortfall. Our "calculator" treatment group asks subjects to use the online Social Security calculator to estimate their retirement benefits. We hypothesize that the calculator treatment will increase the accuracy with which people estimate their retirement benefits, specifically we predict that without the information provided by the calculator people will underestimate their future benefit. We also predict this will increase confidence in the program, partly because it applies a personalized frame to people's consideration of their finances, and partly because it provides a source of accurate information.

Our work contributes to existing studies about Social Security. A small body of work has examined the effect of information on knowledge, expectations and behaviors related to Social Security (e.g., Armour 2020; Cook, Jacobs and Kim 2010; Smith 2020). We contribute to that research in a few ways. First, prior work has predominantly looked at the effects of physical mailers that Social Security used to send to workers, but has largely discontinued. By contrast, we look at informational strategies featured on the Social Security website, in particular the effect of an interactive personalized financial calculator. The receipt of the mailer is passive, while the use of the calculator is more active. Further, it better reflects how Social Security is

currently conveying this information. Second, prior work has also largely not examined the effect of such information on accuracy of retirement estimates that people hold, with the exception of Biggs (2010), which finds that mailed benefits statements do not increase accuracy. Third, we focus on the particular issue of OASI trust fund depletions, which surveys show is a large issue for the public, but which has received scant research attention (Armour 2020 is an exception). Finally, we also consider policy feedback effects, examining how information about personal benefits from a program affects trust in and support for the program. Since there is some evidence that information nudges might improve the accuracy of citizen beliefs, but have only temporary effects (Larsen and Olsen 2020), we will measure our dependent variables twice - immediately after exposure to the treatment, and again two weeks later. In this current version of our report, however, we present only the results of a pilot study.

Experimental Design

To test our hypothesis about the efficacy of personalized financial information with regard to people's predictions about their retirement and views and support of Social Security, we designed a population-based survey experiment. The survey experiment will be fielded in August 2021, after a pilot survey (N=1,043) was conducted among a US-based crowdsourcing platform (i.e, Prolific). The aim of the pilot survey was to test experimental materials and survey wording. For the purpose of this research report, we report findings from the pilot study but will update with results from the actual survey by end-August 2021.

The final experimental design included three experimental conditions, randomly allocated between respondents: (1) a control group that includes a simple statement about the OASI funds, (2) a status-quo condition which is modelled after Social Security "message to the public" (SSA 2020), and (3) an information treatment condition which includes the same text as in the control condition plus an encouragement to use the SSA benefit calculator to receive respondent's predicted benefits. Condition 3 also asked respondents for their estimated monthly benefits as provided by the calculator, and included an image to aid using the calculator correctly.

The final experiment will be embedded in a nationally representative sample of US residents aged 18-60 years. AmeriSpeak is an internet probability based national study run by NORC at the University of Chicago (NORC 2021). It is widely regarded as the gold standard for internet-based panels. It is designed to be representative of the entire United States, and employs a series of novel recruitment techniques to ensure representation of communities, such as rural populations, not typically well-represented in internet-based panels. The current panel size is 48,900 panel members aged 13 and over residing in over 40,000 households. Our study drew on a random sample of 1,000 individuals from the panel, between the ages of 18 and 60. We also exclude those receiving Social Security benefits. The results will be weighted, based on Current Population Survey data, to ensure representativeness.

Prior to the experimental treatment, respondents will be asked questions to assess their financial literacy, date-of-birth and anticipated retirement date. The AmeriSpeak panel also includes basic demographic data including race, age, educational attainment, and income. Two

weeks after the actual survey experiment, a follow-up survey will be distributed to respondents to assess longevity of treatment effects. Both wave 1 and 2 will have the same outcome measures, but the experimental materials are only included on the first wave.

As an outcome measure, we included a question about the benefits amount people expect to receive when they plan to retire (i.e., "*What approximate Social Security retirement benefit amount per month do you expect to receive when you plan to retire?*"), as well as their confidence in the prediction (i.e., "*How confident are you in your prediction above?*"). Response options were provided on a 100-points slider scale, ranging from "not confident at all" to "very confident".

We also assess respondents' views towards SSA by examining their perceived reputation using an adapted version of Lee and Van Ryzin's (2019) 5-item bureaucratic reputation scale. Sample items include statements such as "Overall, the Social Security Administration has a good reputation" or "The Social Security Administration is a well run organization" -- a full list of items can be found in the appendix. Response categories were ordered on a 5-points scale from strongly disagree to strongly agree.

Results[1]

We first examine the effectiveness of our treatment condition versus the status quo and control conditions using a series of regression models. Our first dependent variable (i.e., people's predictions about the retirement benefits) is left censored with about 70 responses responding that they will receive $0, hence we will estimate a Tobit regression model to deal with this left censoring. For our second (i.e., people's confidence in their prediction) and third (SSA's reputation) dependent variables we are using conventional linear regression models with heteroskedasticity robust standard errors.

We first examine respondents' expected benefit amount. In the personalized treatment condition, we have asked respondents to report their benefits amount as provided by SSA's benefits calculator. First, from table 1, we can see that compared to the status-quo condition, respondents in the personalized information condition expect a higher benefit amount of about $237 (p=0.001). Compared to the control condition, the amount is about $135 higher (p=0.063). There is no statistically significant difference between control and status-quo conditions. Results are also presented in figure 1 in the appendix, including a benchmark for the approximate benefit amount people will receive from Social Security (without considering a potential shortfall). Here, people reported an average of $1,647.50. We can see that while respondents in the control and status-quo conditions significantly underreported their predicted earnings on average (by $214 and $300 respectively), those in the personalized information conditions made predictions that are within the range of what they would receive on average - albeit some underreporting can be detected as well (by about $66).

---

[1] Results presented here are based on a provisional pilot study report findings from the pilot study but will update with results from the actual survey by end-August 2021.

Table 1: Experimental results

	(1)	(2)	(3)
	Expected benefit amount	Confidence	Reputation
Experimental conditions (ref. Status-quo)			
Control	103.37 (69.88)	-3.37 (2.27)	-0.12 (0.06)+
Personalized	236.84 (71.76)**	7.16 (2.38)**	-0.03 (0.07)
Observations	1,043	1,043	1,036

Robust standard errors in parentheses

+ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

When we look at people's confidence in their prediction (table 1), a similar picture comes into being. Respondents in the personalized treatment condition had 7.2 percentage points more confidence in their prediction compared to those in the status-quo conditions (p=0.003), and 10.5 percentage points greater trust than the control condition (p=0.000). There was no statistically significant difference between control and status-quo conditions, although respondents in the status-quo condition were about 3.4 percentage points more confident in their prediction (see also figure 2 in the appendix). Thus, the results suggest that the personalized treatment increases confidence in estimated retirement earnings.

Finally, we examine the effectiveness of our treatment on people's views of SSA. We found no statistically significant difference between any of our experimental conditions and mean differences between groups were relatively small. Respondents in the personalized treatment conditions had less favorable views towards SSA by 0.03 points (on a 5-points scale) compared to the control group, and 0.09 points more favorable views compared to the status-quo condition.

Discussion

The results presented here provide a provisional snapshot of a pilot study examining how information treatments affect perceptions of OASI. In particular, we build on studies examining the effect of conveying personalized information about peoples' Social Security benefits in mailers. We instead focus on the effect of providing personalized information via the Social Security online retirement calculator. The mailer was one of the largest federal government personalized mailings to the public. It had benefits in terms of improving knowledge about the program, and informing worker plans for retirement.

Understanding the potential effect of online Social Security personalized financial information becomes more important as SSA has largely phased out physical mailers, and more generally has moved to shift services on-line. The most recent version of these mailers conveyed both information about the pending shortfall and personalized financial information. In our

analysis we separate the two, reflecting the fact that both messaging exists on the Social Security website, but in different places. The provisional results we provide suggest that relative to a control group, and other online messaging about the shortfall, directing people to the calculator generates more accurate understanding about individual retirement benefits, at least in the short run, and more confidence in those estimates. In particular, we found that the calculator ensured that people were less likely to underestimate their projected Social Security benefit. It did not, at least in our pilot sample, increase more general confidence in the Social Security Administration.

Conclusion

A central policy implication from this project is that findings suggest embedding the calculator more aggressively into Social Security Administration outreach may benefit the public.

References

Armour, Philip. 2020. "How Did the Reintroduction of the Social Security Statement Change Workers' Expectations and Plans?." *Soc. Sec. Bull.* 80: 23.

Biggs, Andrew G. 2010. "Improving the *Social Security Statement*." Financial Literacy Center Working Paper No. WR-794-SSA. Santa Monica, CA: RAND Corporation.

Campbell, Andrea Louise. "Self-interest, social security, and the distinctive participation patterns of senior citizens." *American Political Science Review* 96, no. 3 (2002): 565-574

James, Oliver, Donald Moynihan, Asmus Olsen and Gregg Van Ryzin. 2020. *Behavioral Public Performance: How People Make Sense of Government Metrics.* Cambridge: Cambridge University Press.

Lee, Danbee, Van Ryzin, Gregg. Measuring bureaucratic reputation: Scale development and validation. *Governance*. 2019; 32: 177– 192.

NORC. 2021. Technical Overview of the AmeriSpeak Panel: NORC's Probability Based Household Panel. https://amerispeak.norc.org/Documents/Research/AmeriSpeak%20Technical%20Overview%202019%2002%2018.pdf

Smith, Barbara. 2020. Can informational interventions be effectvei policy tools? An initial asessment of the Social Security statement. *Social Secuirty Bulletin* 80(4): 1-22.
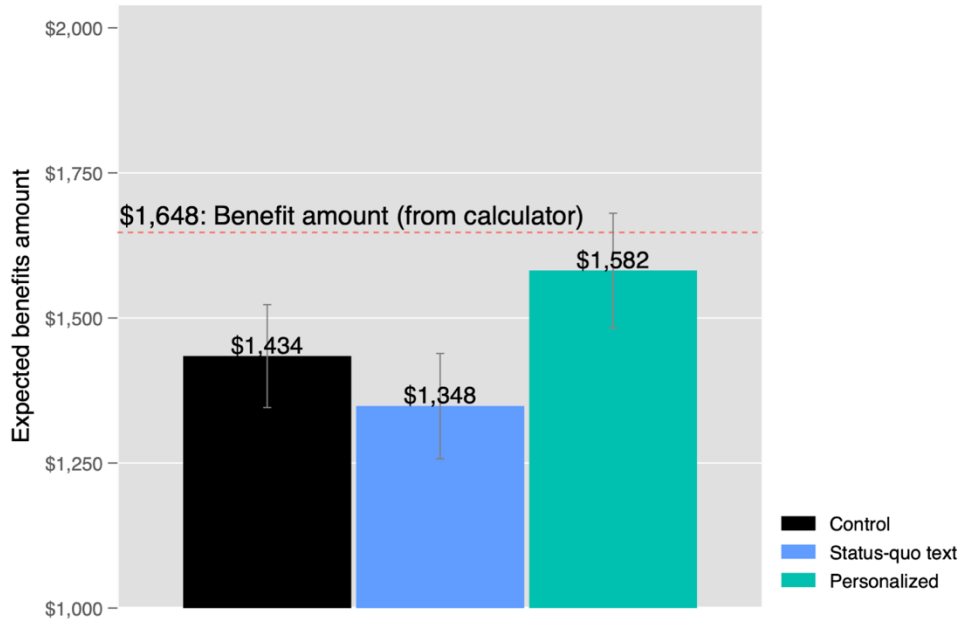
Figure 1: Expected benefit amount

Figure 2: Confidence in prediction
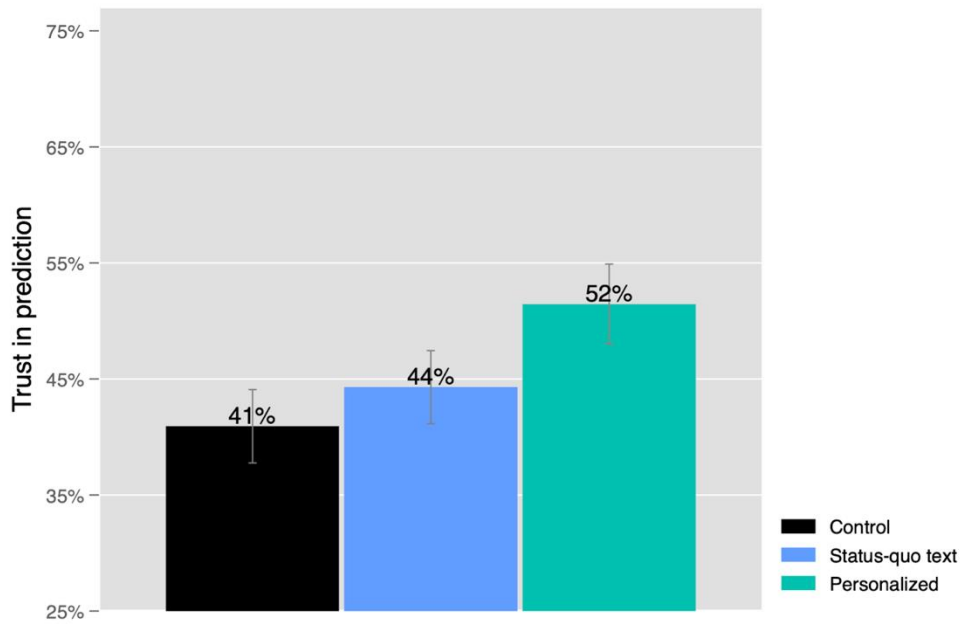
Figure 3: Bureaucratic reputation
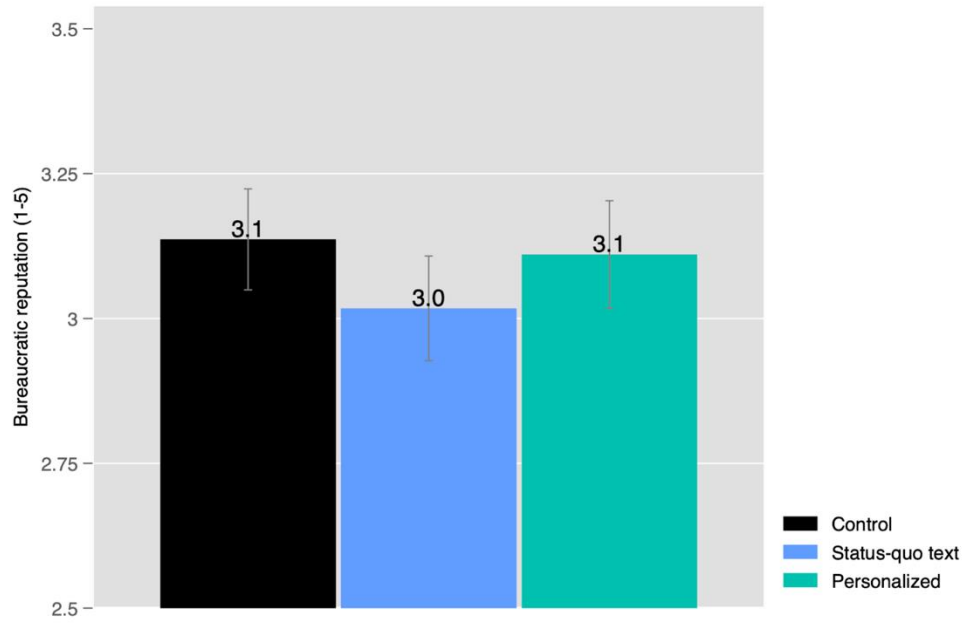
Panel 5: Disability Applications and Outcomes

Moderator: Gina Clemons (U.S. Social Security Admininstration)

Outcomes Following Social Security Disability Insurance Termination
***Michael Anderson**, Denise Hoffman (Mathematica), and Kai Filion (U.S. Social Security Administration)*

Do Workers Injured on the Job and Covered by Workers Compensation End Up on SSDI?
***David Neumark** (University of California-Irvine)*

Applying Aspects of Disability Determination Methods from the Netherlands in the U.S.
*Nicole Maestas, **Bastian Ravesteijn** (Harvard), Kathleen Mullen (RAND) and Tisamarie Sherry (RAND)*

Outcomes Following Disability Insurance Termination

Michael Anderson, Monica Farid, Denise Hoffman
Mathematica

Kai Filion
Social Security Administration

Prepared for the 23rd Annual Meeting of the Retirement and Disability Research Consortium
August 5 & 6, 2021

Introduction

Social Security Disability Insurance (DI) beneficiaries whose benefits the Social Security Administration (SSA) terminated because they no longer met eligibility requirements may find it difficult to return to long-term attachment to the labor force. Although only current DI beneficiaries are under the purview of the DI program, SSA has a vested interest in understanding the behavior of people with disabilities who are likely to enter, or re-enter, the program. Notably, previous research has demonstrated that many DI beneficiaries who exit the program eventually return. Hence, understanding trends in post-termination outcomes and the characteristics of beneficiaries who do, or do not, successfully return to the labor force following termination of benefits can help SSA and policymakers to design interventions that help former DI beneficiaries maintain their independence from the DI program.

Prior work has examined subsequent program participation (Hemmeter and Stegman, 2013) and earnings (Hemmeter and Bailey, 2016) of former DI beneficiaries whose benefits SSA terminated following a full medical review. This study adds to the literature by examining the outcomes of former DI beneficiaries whose benefits were terminated for work (in 2005 through 2014) in addition to those whose benefits were terminated for medical improvement (in 2001 through 2014). The termination determination for beneficiaries who engaged in work is not based on a medical evaluation and these former beneficiaries are eligible for Expedited Reinstatement (EXR).

We examined trends in program participation and earnings in the five years following benefit termination separately by pre-termination entitlement status (DI-only versus concurrent Supplemental Security Income (SSI) and DI) and by reason for termination (earnings versus medical improvement). We compared average post-termination earnings with an earnings threshold that is the annualized equivalent of SSA's substantial gainful activity (SGA) threshold. Finally, we investigated the characteristics of former beneficiaries that were associated with a successful return to work or independence from DI in the years following termination of benefits.

Data and Methods

The 2019 version of the Disability Analysis File (DAF) includes information on full medical reviews (FMRs) using data from the SSA Waterfall file, and on continuing disability

reviews (CDRs) drawn from the Disability Control File (DCF). Whereas the Waterfall file includes information on the final decision, the DCF only includes information on the initial decision. We used DAF data drawn from the Master Beneficiary Record to establish whether SSA ultimately terminated the benefits of DI beneficiaries we identified in the DCF with an initial work CDR cessation. We used the DAF-linked Master Earnings File (MEF) to construct earnings measures.

The study population is former disabled workers whose benefits SSA terminated in 2001 through 2014 due to medical improvement or work, and who were younger than age 60 as of the initial decision and younger than 62 as of the final decision. We found that the DCF did not include all benefit terminations in 2001 through 2004 so we did not include individuals whose benefits terminated due to work in those years in our final analysis file. Our final analysis sample consists of 182,286 former beneficiaries whose benefits were terminated due to work in 2005 through 2014 and 112,824 former beneficiaries whose benefits were terminated due to medical improvement in 2001 through 2014.

We identified return to DI in the five years following benefit termination using information in the DAF on current payment status. We used an approach similar to Hemmeter and Bailey (2016) to examine earnings following termination. Specifically, we averaged annual earnings observed in the DAF-MEF during the five years after the year of the termination (excluding the year of termination). We adjusted earnings measures for inflation to 2019 dollars (the latest year of earnings we observed).

Finally, we examined beneficiary and economic characteristics to look for differences between beneficiaries who did, or did not, have substantial post-termination earnings or maintained independence from the DI program following termination. We compared: age group, primary impairment category, SSA expectation for medical improvement at award, past participation in Ticket to Work, duration of entitlement as of termination month, and county unemployment rate in the month of termination.

Results

Unlike those whose benefits terminated due to medical improvement, individuals whose benefits terminated for work did not undergo a medical evaluation during the termination determination process and are eligible for expedited reinstatement. We found that these

95

beneficiaries returned to DI at a higher rate than those who were found to have improved medically (Figure 1). The rate of return is especially high (51 percent) for those who were concurrently entitled at the time of termination for work. This is a small group, fewer than two percent of all terminations for work, whose pre-termination earning were in the narrow range above the SGA threshold and below the threshold for ending SSI entitlement. These individuals likely had a more tenuous attachment to the labor force than those whose income and resources were too high for SSI entitlement prior to termination so a higher rate of return to DI is not surprising.

Figure 1. Percentage of former beneficiaries returned to DI within five years of benefit termination by reason for termination and entitlement status as of initial decision
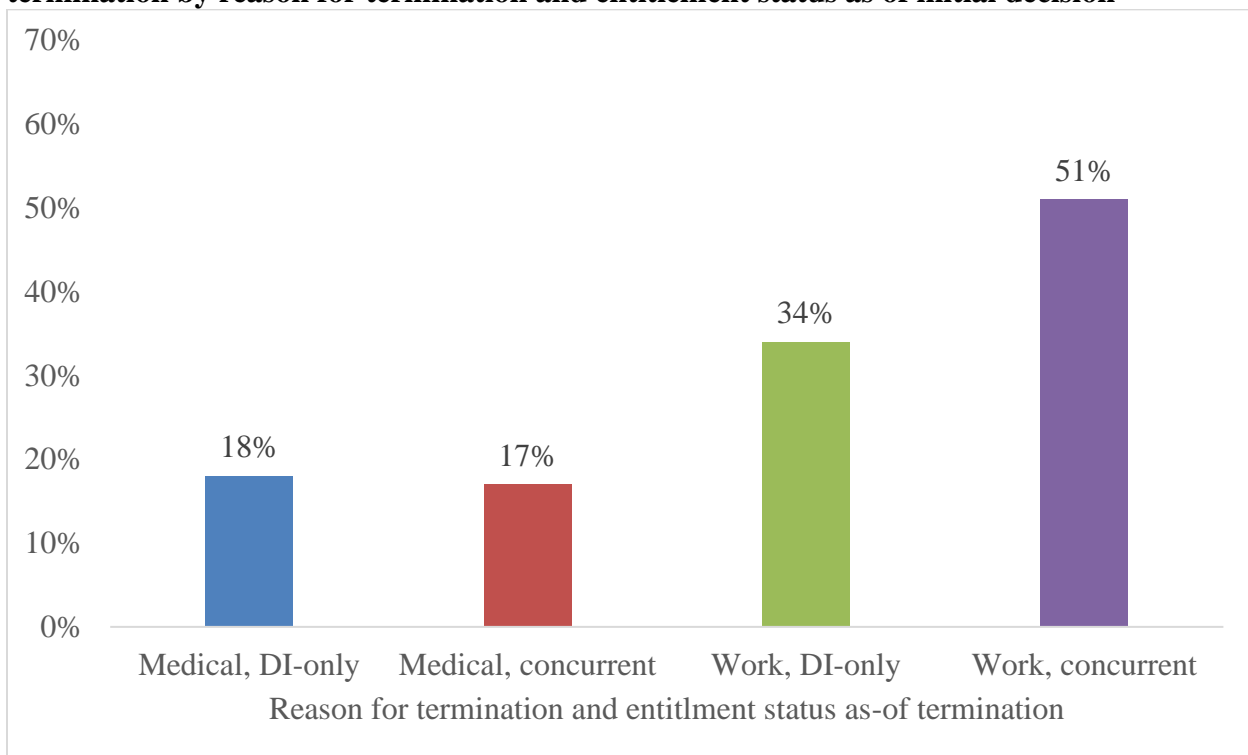
Source: Authors' calculations using the 2019 DAF.

Figure 2 shows the rate of return to DI by calendar year of termination. Among former beneficiaries whose benefits were terminated due to work, return rates were highest for terminations that occurred during the Great Recession, in 2007 or 2008 (36 percent for former DI-only and 56 percent for former concurrent beneficiaries). Rates of return were slightly lower for those whose benefits terminated in the subsequent economic recovery years, falling to 29

and 47 percent, respectively. Return rates for former DI-only beneficiaries whose benefits were terminated due to medical improvement were relatively constant at about 20 percent for those terminated between 2001 and 2009 and were lower for successive termination years, falling to about 12 percent for individuals whose benefits terminated in 2014. Return rates for former concurrent beneficiaries whose benefits were terminated for medical improvement declined throughout the analysis period from 24 percent for terminations in 2001 to 9 percent of terminations that occurred in 2014.

Figure 2. Percentage of former beneficiaries returned to DI within five years of benefit termination by calendar year of termination, reason for termination, and entitlement status as of initial decision
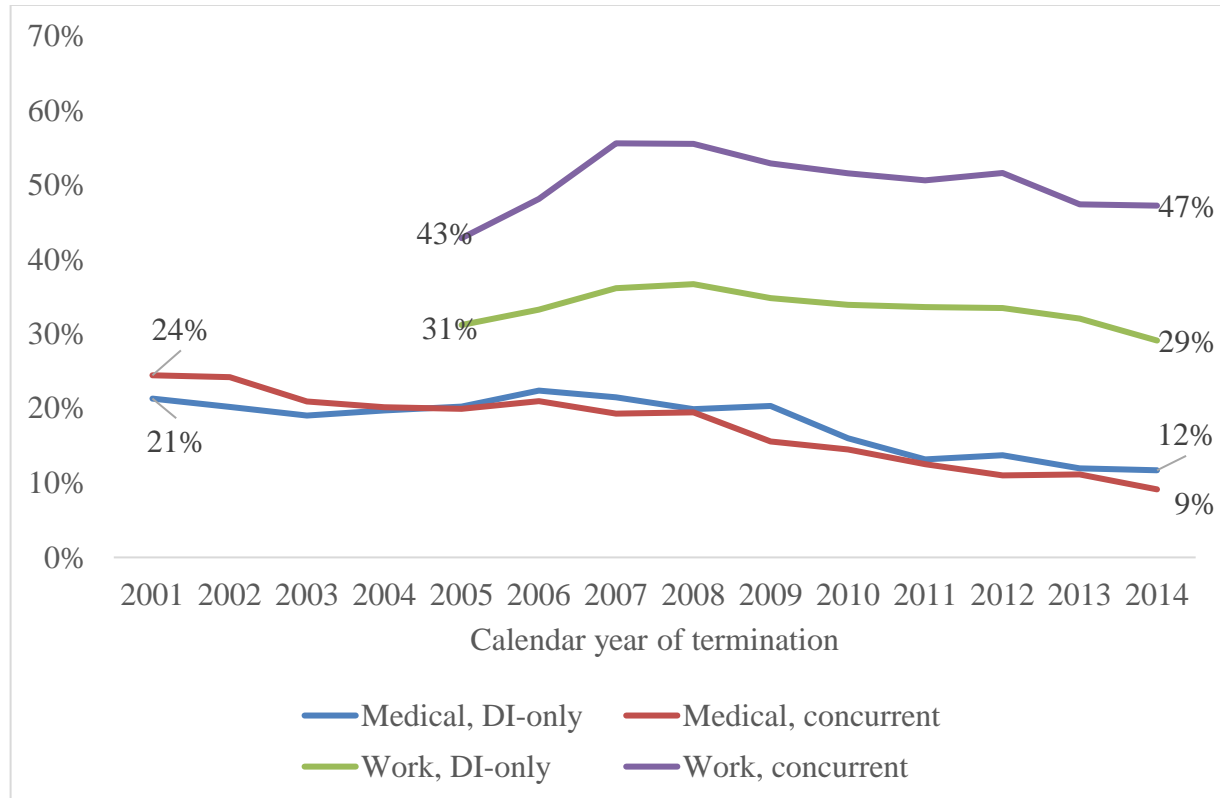
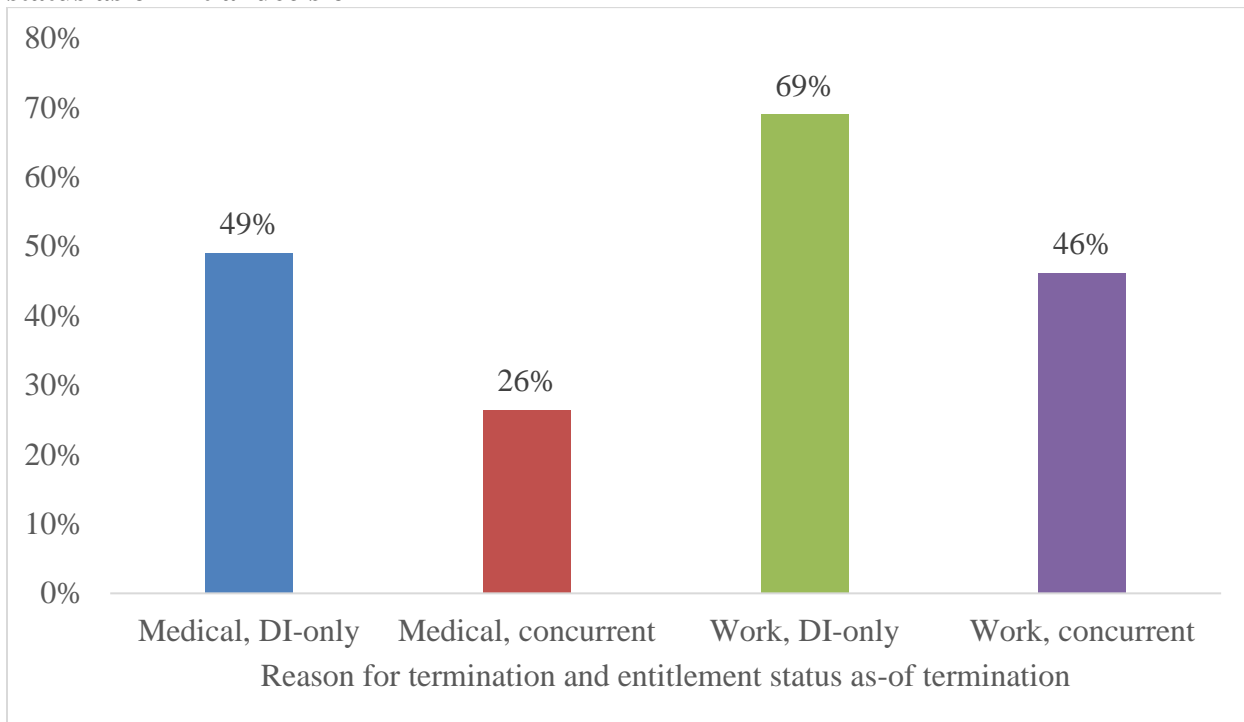Source: Authors' calculations using the 2019 DAF.

We compared earnings, averaged over the five years following termination of benefits, with an annual earnings threshold based on SSA's SGA amount.[1] Figure 3 shows the percentages of beneficiaries (pooled across termination years) with average post-termination

---

[1] In 2021 the (monthly) SGA threshold is $1,310 which equates to $15,720 over twelve months.

earnings above annualized SGA. In general, individuals whose benefits were terminated for work were more likely to have earnings above the thresholds than individuals whose benefits were terminated due to medical improvement. For example, 69 percent of former DI-only beneficiaries whose benefits were terminated for work attained post-earnings above the SGA threshold compared to 49 percent of those whose benefits were terminated for medical improvement. This finding is not surprising given that termination for work implies that a beneficiary had engaged in SGA in the period immediately before benefit termination. It is notable, however, that regardless of the reason for termination, individuals who had been concurrently entitled were substantially less likely to attain earnings thresholds following termination than formerly DI-only beneficiaries.

Figure 3. Percentage of former beneficiaries with average earnings above annualized SGA in the five years following benefit termination by reason for termination, and entitlement status as of initial decision

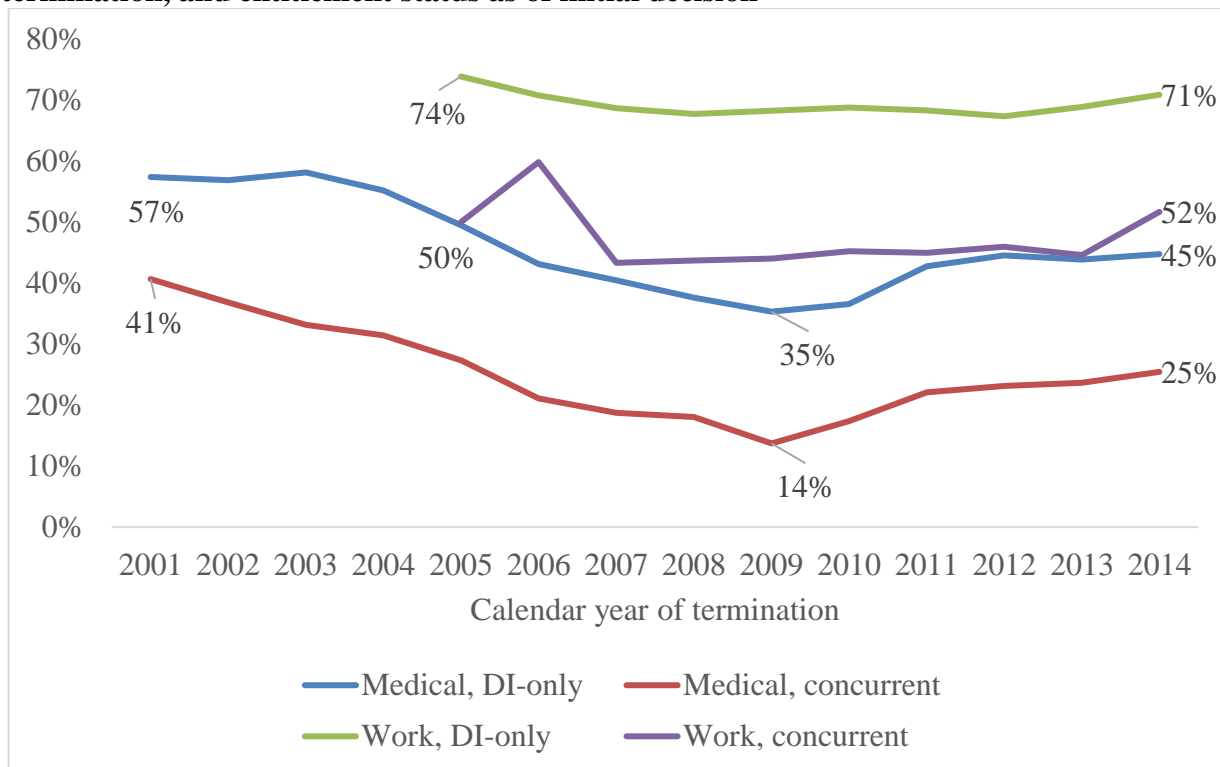Source: Authors' calculations using the 2019 DAF.

The percentages that achieved post-termination earnings above the SGA level were relatively constant among individuals whose benefits terminated for work from 2007 to 2014 (Figure 4). In contrast, there are clear time trends that change direction just after the Great Recession in earnings outcomes for individuals whose benefits were terminated for medical

improvement. Between 2001 and 2009, the share of former DI-only beneficiaries who attained the earnings threshold fell from 57 to 35 percent and the share of former concurrent beneficiaries who attained earnings above SGA fell from 41 to 14 percent. Starting in 2010 the share that attained earnings above SGA increased through the most recent year of data to 45 percent for former DI-only beneficiaries and 25 percent for former concurrent beneficiaries. The increase in recent years coincides with the downturn in return rates to DI among individuals whose benefits terminated for medical improvement (Figure 2), suggesting that higher earnings coincided with lower returns to DI rolls.

Figure 4. Percentage of former beneficiaries with average earnings above annualized SGA in the five years following benefit termination, by calendar year of termination, reason for termination, and entitlement status as of initial decision

Source: Authors' calculations using the 2019 DAF.

We identified several characteristics that were associated with higher rates of return to DI and average earnings below the SGA threshold in the five years following termination. Individuals who were age 40 or older at the time of benefit termination, those who had been entitled to DI for 6 or more years, and those who SSA categorized as "medical improvement not expected" (prior to the initial decision) were more likely to return to DI and less likely to have

earnings above the SGA threshold. Former beneficiaries with a primary diagnosis categorized as "schizophrenia or other psychotic disorders" or "musculoskeletal and connective tissue diseases" were also more likely to return to DI and less likely to have earnings above the SGA threshold. In contrast, individuals with a primary diagnosis categorized as "neoplasms" or "injuries" were less likely to return DI and more likely to have earnings above the SGA threshold. We also found that former beneficiaries who had earnings above the SGA threshold lived in counties with lower rates of unemployment.

Conclusions

The goal of this analysis was to better understand earnings and return to DI in the years following termination of benefits due to work or medical improvement. Our findings suggest that former DI beneficiaries terminated for work were both more likely to have substantial post-termination earnings and more likely to return to DI than individuals whose benefits were terminated for medical improvement. There are two reasons that we might expect these findings. First, expedited reinstatement allows individuals whose benefits were terminated for work an easier path back to entitlement compared to those whose benefits were terminated for medical improvement. Second, individuals whose benefits were terminated due to work almost certainly have stronger connections to the labor force than those whose benefits were terminated for other reasons. Despite these likely differences, we found certain characteristics common to both groups that were correlated with return to work and benefit independence. This suggests that age, duration of entitlement, expectations for medical improvement, and certain diagnoses may be predictive of successful return to work, regardless of the reason for termination. While trends in return to DI and earnings did not evolve much over our analysis period for individuals whose benefits were terminated for work, there was a shift in the years following the Great Recession in the outcomes of individuals whose benefits were terminated due to medical improvement. Investigating the factors leading to the change in earnings and program participation trends among terminations for medical improvement is a natural avenue for further research.

References

Hemmeter, Jeffrey and Michelle Stegman. 2013. "Subsequent Program Participation of Former Social Security Disability Insurance Beneficiaries and Supplemental Security Income Recipients Whose Eligibility Ceased Because of Medical Improvement." *Social Security Bulletin.* Vol. 73, No. 2

Hemmeter, Jeffrey and Michelle Stegman Bailey. 2016. "Earnings after DI: evidence from full medical continuing disability reviews." *IZA Journal of Labor Policy* (2016) 5:11

Workplace Injuries and Receipt of Benefits from Workers Compensation and SSDI[*]

Daniel Ladd
UCI

David Neumark
UCI

July 2021

Abstract: We use data from the Health and Retirement Study (HRS) and matched Social Security Administration (SSA) data to study two questions. First, we examine evidence on whether workers who suffer permanently disabling injuries covered by Workers Compensation (WC) subsequently end up on SSDI. Second, under some conditions, Social Security Disability Insurance (SSDI) benefits are supposed to be reduced for workers receiving WC benefits ("offsets"). This offset is most relevant for workers with WC-compensable permanently disabling injuries. We find that SSA appears to have quite complete information on WC benefit receipt, but that the degree to which SSDI benefits are reduced because of the WC offset seems surprisingly low. The novel feature of our analysis is to capture data on WC benefit receipt from the HRS and link it to SSA data on WC and Social Security Disability Insurance (SSDI) recipients.

Introduction

Workers injured on the job in the United States are potentially eligible for indemnity benefits from Workers Compensation (WC). Over 80% of these benefits are temporary, with benefits ending upon return to work. The remainder (around 17%) involve permanent disabilities that lead to longer-term ("permanent") benefits or a lump-sum settlement. Disabled workers in the United States – whether or not the disabilities result from one's job – are also potentially eligible for disability benefits from Social Security Disability Insurance (SSDI).

We explore whether workers sometimes draw disability benefits from both programs. We ask whether workers injured in the workplace, who get Permanent Partial Disability (PPD) or Permanent Total Disability (PTD) benefits under WC, go onto SSDI and receive SSDI benefits as well. We also explore whether, when workers are eligible for benefits under both programs, SSDI benefits appear to be appropriately reduced ("offset"). Offsets are built into the programs to prevent beneficiaries of both programs from receiving benefits exceeding a given threshold relative to prior earnings. But the offsets are difficult to implement, and recipients are incentivized to try to preserve eligibility for benefits from both programs. We use data from the Health and Retirement Study (HRS), and confidential data from the Social Security Administration (SSA) that can be linked to the HRS data. Our evidence addresses whether SSA appears to be aware of whether disabled workers were injured on the job and are receiving WC benefits and whether SSA appears to be calculating whether offsets should be applied – necessary conditions for reducing SSDI benefits, when appropriate, to offset WC benefits.

This research is important to SSDI and WC policy. For SSDI, in most states benefits are, in many cases, supposed to be reduced to offset WC benefits. If this is not occurring, then a better system to track SSDI enrollees who are or were compensated by WC, and to apply the appropriate offsets, could reduce SSDI expenditures without depriving disabled workers of compensation. Aside from this issue, if workers are experiencing permanently disabling injuries that should be fully compensated by WC but are not because of workers going on to SSDI, then experience rating in WC (basing insurance premiums in part on historical claims) may not be doing all it should to promote workplace safety, hence leading to more individuals who have had disabling workplace injuries, imposing costs on both systems (and reducing worker well-being).

Workers Compensation and Social Security Disability Insurance Offsets

In most states, SSDI benefits are supposed to be reduced when combined SSDI and WC

benefits are too high – exceeding 80% of prior earnings (Murphy et al., 2020, Table 19). In some states the offsets are instead supposed to reduce WC benefits ("reverse offsets"; see Clayton, 2003/2004). In principle, there is coordination between the two programs to avoid paying benefits that are too high relative to lost earnings stemming from being disabled.

However, the offset process is not so simple. It requires SSA to use complex information on WC benefits, and the information is difficult to access (Clayton, (2003/4). Part of the problem is that WC benefits are self-reported by workers to SSA; there are not automated data matches with state WC systems (O'Leary et al., 2012), and provision of the information is voluntary (SSA Form, OMB No. 0960-0247). The problems can be especially complicated with lump-sum settlements, which make it hard to calculate the benefit payments to apply the 80% rule.

Perhaps because of these complications and the financial stakes, attorneys appear to get involved to help workers avoid or reduce offsets. Attorneys suggest specific ways to specify lump-sum settlements to make benefits seem smaller, and specifying some benefits as medical so that these benefits are not used in the offset calculation.[1]

Our Approach

Most past work on this topic (except O'Leary et al., 2012) is based on SSA data only, and does not account for the for potential difficulty SSA has in determining WC receipt. The HRS provides an independent measure of WC receipt. It also has information on whether the workplace injury was permanent or temporary, and the rating for permanent disability (all self-reported). Thus, we can characterize SSDI receipt for those who, in the HRS, report getting WC benefits, and also tie SSDI receipt to details on HRS respondents' WC-compensable injuries. We also look in detail at the information on SSDI offsets in the matched SSA data. We are able to document differences by the type of state (reverse offset or not), based on special permission we received from the HRS to do restricted matching between the HRS, SSA, and geographic data.

The matched data let us identify SSDI recipients who are getting WC benefits for permanently disabling injuries (based on the HRS). Information in the SSA data points to a few important types of cases, including: whether SSA is offsetting WC benefits; whether SSA has knowledge of WC receipt; and for the unknown cases, whether they are for individuals who ever

---

[1] See, e.g.: https://www.nolo.com/legal-encyclopedia/minimize-how-much-workers-compensation-will-lower-social-security-payments.html; https://www.disabilitysecrets.com/resources/disability/how-workers-compensation-benefits-offset-socia; and https://jimglaserlaw.com/will-my-workers-comp-settlement-affect-my-disability-payments/.

were in a reverse offset state or never were. In the latter cases SSA should have knowledge of WC benefits, whereas for reverse offset states there might be no reason for SSA to have or record this information. To do this analysis, in addition to the HRS, we use the SSA Cross-Year Respondents Benefit File, the (annual) Disability Analysis File, and the Cross-Wave Geographic Information – State File.

Results

Column (1) of Table 1 shows that, of 40,169 HRS respondents, just over 10% report receiving SSDI benefits (4,152), while 2.2% (901 respondents) report receiving WC benefits. The share of SSDI recipients who also report WC benefits is 6.8% (283/4,152), close to an earlier 6.9% estimate (Parent et al., 2012) for a period near the midpoint of the HRS years we use. The latter estimate comes from SSA data, so the similarity of the estimates suggests that SSA may not be missing many dual benefit recipients. The share of WC recipients who report SSDI benefits is much higher – 31% (283/901) – than the share of SSDI recipients who report receiving WC. Given that disabilities of people on SSDI need not be work related, this latter percentage seems high, reinforcing the significance of the questions we consider.

Of those who received WC benefits, 40.3% (363/901) report a temporary disability, and 20.5% (185/901) report a permanent disability; the latter group (185 respondents) is most relevant to our analysis, and has a higher average disability rating – 79.3%.[2] Column (1) next reports on the respondents who report receiving both SSDI and WC benefits. For those reporting both WC and SSDI benefits, the share reporting a permanent WC disability (among those responding) is 43.9% (75/171), compared to 33.8% among all WC recipients. Correspondingly, the disability rating among those who receive both WC and SSDI benefits is higher, at 88.3%, pointing to those with more severe, permanent WC-compensable disabilities being more likely to go on SSDI.

Column (2) of Table 1 reports the same calculations as column (1), but for the HRS respondents for whom the SSA data are available. On our key variables of interest, these data look quite similar to the full HRS sample, with the important exception that a much larger share report SSDI – which largely occurs because one can only show up in the SSA data if one is receiving some benefits from SSA. Of those reporting a WC disability and reporting whether it is

---

[2] These average ratings may be biased upwards because if a respondent indicates total disability, then a 100% rating is auto-filled. But if they do not indicate total disability, they have to provide a rating.

permanent or temporary, 38.2% report a permanent disability. This is a bit higher than the percentage in column (1) that reports a permanent disability (33.8%). Given that receiving SSDI is associated with being represented in column (2), the higher share on permanent disability in the column (2) subsample provides an indication that workers with permanent WC disabilities are more likely to go on SSDI. (However, the average disability rating for those with permanent disabilities is a shade lower in column (2).)

We have also examined additional information on when HRS respondents enter the SSA data (for those who do). We find that 82.3% (195/237) of those who, in the HRS, say they received both WC and SSDI, enter the SSA data as disabled – i.e., receiving disability benefits. This estimate, in our view, helps establish the validity of the HRS survey responses regarding WC and SSDI receipt. The high percentage of those receiving WC and SSDI who enter the SSA data as disabled suggests we are tracking behavior fairly well in self-reports.

Table 2 provides the information on offsets. There are 52 people who receive WC and SSDI benefits and report a permanent disability. Of these, column (2) shows that 14 are reported in the SSA data as having SSDI benefits offset, and column (3) shows that for an additional 6, the data indicate that SSA knows of the WC benefits but did not offset benefits (that is, columns (2) and (3) are mutually exclusive). Thus, we might conclude that offsets are being calculated (and applied when appropriate) to 38.4% (20/52) of those receiving both types of benefits who have a permanent disability. This offset percentage is higher than SSA data indicate for dual eligibles (e.g., 12.5% in the 2019 data; SSA (2020, Table 21)). However, it should be higher because we are doing the calculation limiting to those reporting a permanent WC disability.

In contrast, 61.5% (32 across columns (4) and (5), divided by 52) appear to be unknown to SSA and hence not offset. At least for the 11 cases in column (5), who are *never* in a reverse offset state, there is no clear reason SSA should not be considering an offset (which we assume means the person should appear in column (2) or (3) instead). It is not clear that for a reverse offset state there would be a reason for SSA to do an offset calculation, so it is possible that the "unknowns" in column (4) reflect these cases. However, note that the classification of whether these cases are in reverse offset states is overly broad because it is based on whether one is *ever* in a reverse offset state. Even if we assume the only cases that should be known to SSA are those in the last column, there appears to be a fairly high percentage of cases with permanent disabilities who are drawing both WC and SSDI benefits with no indication of SSA knowledge

with which to potentially apply an offset (21.2%, or 11/52); and since many cases in column (4) should likely have offsets applied (and it may be that SSA should do the calculation for all SSDI applicants), the correct percentage is likely higher.

Earlier, we noted the potential for manipulation of WC permanent disability awards to minimize offsets. There is some evidence in the data that this may be occurring. The average disability rating is higher (95.0%, column (3)) for those with no offset, but for whom the offset is known to SSA, than for those with an offset (82.3%, column (2)). All else the same, we would expect higher WC benefits and hence more offsets with a higher rating disability rating, so the data suggest that SSDI offsets are not being applied appropriately. Conceivably, this happens because those with the highest disability ratings have WC awards more easily manipulated by attorneys to reduce offsets (e.g., but shifting benefits to future medical expenses).

Other data also suggest that the rate of application of offsets is surprisingly low. SSA (2019, Table 21) reports that 66.7% of joint SSDI and WC (or PDB) recipients have no offset because of the 80% rule. Such a high share would imply that most workers drawing benefits from both programs have combined benefits below 80% of prior earnings. State WC systems have maximum payments, as does SSDI, and hence prior earnings could be a good deal higher than combined benefits for some workers. However, injuries are more common for lower-earning workers (Boden, 2005), and benefits are more generous for low earners. Moreover, we have shown that those drawing benefits from both programs have a high incidence of permanent disabilities and high permanent disability ratings, implying higher benefits, which should make the 80% rule more likely to bind. Thus, it is surprising that the majority of workers qualifying for both programs would have benefits below 80% of prior earnings. This question is worthy of more exploration, especially in light of the scope for manipulating WC payments to reduce the likelihood of an offset – and is something we plan to take up in future research, mainly by studying prior earnings in relation to estimated benefits.

Conclusions and Discussion

We find that SSA appears to have quite complete information on WC benefit receipt. We cannot definitively establish whether injured workers are getting benefits from both programs without the mandated offsets being applied. However, the evidence suggests this is occurring. The behavior of this type that we can observe in the data appears to be generated from cases where a worker is receiving permanent WC benefits, but SSA is not aware of these benefits.

References

Boden, Leslie I. 2005. "Running on Empty: Families, Time, and Workplace Injuries." *American Journal of Public Health*, 95(11), pp. 1894-1897.

Clayton, Ann. 2003/2004. "Workers' Compensation: A Background for Social Security Professionals." *Social Security Bulletin*, 65(4), pp. 7-15.

Murphy, Griffin, Jay Patel, Elaine Weiss, and Leslie I. Boden. 2020. *Workers' Compensation: Benefits, Costs, and Coverage (2018 Data).* National Academy of Social Insurance, Washington, DC.

O'Leary, Paul, Leslie I. Boden, Seth A. Seabury, Al Ozonoff, and Ethan Scherer. 2012. "Workplace Injuries and the Take-Up of Social Security Disability Benefits." *Social Security Bulletin*, 72(3), pp. 1-17.

Parent, Rene, Incigul Sayman, and Kevin Kulzer. 2012. "Profile of Social Security Disabled Workers and Dependents Who Have a Connection to Workers' Compensation or Public Disability Benefits." Social Security Administration, Research and Statistics Note No. 2012-03, https://www.ssa.gov/policy/docs/rsnotes/rsn2012-03.html.

Table 1: Workers Compensation and Social Security Disability Insurance Reporting in the HRS and SSA Data

	HRS Data	Total with SSA Data
	(1)	(2)
Total Individuals	40,169	19,949
Receive either WC or SSDI	4,770	3,337
Receive SSDI	4,152	3,102
Receive WC	901	472
Perm Disability	185	97
Temp Disability	363	157
Avg Rating (Permanent)	79.0% N = 161	77.3% N=83
Receive both WC and SSDI at some time	283	237
Perm Disability	75	52
Temp Disability	96	68
Avg Rating (Permanent)	88.3%, N = 68	85.6% N=47

Table 2: Information on Offsets, HRS Respondents in SSA Data

	Total with SSA Data	Offset	Knows	Unknown and Ever in Reverse Offset State	Unknown and Never in Reverse Offset State
	(1)	(2)	(3)	(4)	(5)
Total Individuals	19,949	177	124	9,062*	10,586*
Receive either WC or SSDI	3,337	143	61	1,326	1,807
Receive SSDI	3,102	135	54	1,199	1,714
Receive WC	472	70	32	211	159
Perm Disability	97	16	8	46	27
Temp Disability	157	16	6	80	55
Avg Rating (Permanent)	77.3% N=83	84.9% N=14	86.9% N=8	76.1% N=40	71.2% N=21
Receive both WC and SSDI at some time	237	62	25	84	66
Perm Disability	52	14	6	21	11
Temp Disability	68	17		27	24
Avg Rating (Permanent)	85.6% N=47	82.3% N=12	95.0% N=6	82.8% N=20	90% N=9

Applying Aspects of Disability Determination Methods From the Netherlands in the U.S.

Nicole Maestas
Harvard University, NBER

Kathleen J. Mullen
RAND

Bastian Ravesteijn
Erasmus University Rotterdam

Prepared for the 23rd Annual Meeting of the Retirement and Disability
Research Consortium August 5 & 6, 2021

Introduction

In recent years, there has been a policy debate about whether the disability determination process for Social Security Disability Insurance (DI) benefits in the U.S. should be revised to reflect changes in the functional requirements of work. In particular, some policy makers have expressed interest in incorporating insights about how disability determination in other countries relies on information about occupational requirements to make disability determinations. The disability determination system in the Netherlands is one potential model.

The Netherlands uses a unique, direct method of measuring an applicant's residual work capacity. Disability assessment focuses on first identifying specific residual functional abilities. These standardized functional abilities are then directly linked to standardized requirements of existing jobs in the Netherlands, allowing direct computation of the set of feasible jobs and residual earnings capacity of an applicant, conditional on educational attainment. Moreover, it is possible to calculate an estimated degree of disability, defined as the ratio of estimated residual earnings capacity to prior earnings. This degree of disability is used to determine eligibility for DI benefits, which can be received as full benefits or as partial benefits combined with part-time work.

In contrast, the system in the U.S. relies heavily on delineation of medical conditions, and does not utilize a standardized, explicit link between an applicant's functional abilities and the functional requirements of alternative jobs in the national economy. Instead, applicants are deemed to have no work capacity if they have one or more specific medical conditions or if they fall into certain categories under the medical-vocational guidelines, based on age, education, prior work experience and an aggregated measure of residual functional capacity. The guidelines were originally intended to identify as disabled only those applicants with little remaining capacity for physically demanding work and who had limited job prospects because of their low education, narrow skills, and/or age, but the guidelines have not been updated since 1978 and only ever comprised a coarse mapping between health and alternative job prospects (Maestas 2019).

The goal of this project is to explain how work capacity is measured in the Netherlands and then apply aspects of that method to a representative sample of Americans. The insights from this project could motivate improvements in the current disability determination process. Moreover, understanding the explicit links between medical conditions, functional abilities, and the requirements of occupations could provide useful inputs for SSA's work incentive programs by explicitly listing the jobs that a beneficiary is

capable of performing. Such information could facilitate identification of opportunities for targeted rehabilitation or accommodation interventions. And more specifically, this project identifies functional limitations with high potential productivity gains both from accommodation for those who currently have the limitation, as well as from prevention among those who currently do not have the limitation.

Disability Determination in the Netherlands

DI applications for individuals with recent work history in the Netherlands are processed by the UWV, the Dutch Social Security Administration, after two years have passed since the onset of disability. During these two years, mandatory sick pay is paid by the employer for the duration of the employment contract, and by a public short-term DI scheme.

Based on UWV manuals, interviews with UWV staff, and site visits, we have gained insight into the work of three types of specialists who are central to the Dutch disability determination process. First, occupational analysts maintain a database of approximately 5,500 job profiles, which describe the tasks, functional ability and educational requirements, and earnings of actual jobs in the Netherlands. Job profiles are unique in their duties and characteristics and can be aggregated in nearly 300 occupations defined by up to three generalized tasks (approximately equivalent to the four-digit level of Standard Occupation Classification in the U.S.). Job profiles are only included in the database if they relate to an occupation that exists in every region of the country.

The second type of specialist is a physician who records the applicant's medical conditions and completes a 106-item standardized Functional Abilities Questionnaire, based on an examination and interview with the applicant and a review of the applicant's medical records. The functional abilities of applicants and the functional requirements of jobs are measured on the same scale.

Finally, a third specialist, the disability assessor, records the educational attainment of the applicant and runs an "automated pre-selection" procedure which accepts, flags, or rejects job profiles in the database, by comparing the ability and educational requirements to the residual functional abilities and educational credentials of the applicant. The automated preselection procedure results in a list of job profiles for which all functional and educational requirements are met by the applicant. The disability assessor is then presented with the list of job profiles, ranked by their associated earnings. Starting from the top of the list, the disability assessor verifies the feasibility of each job profile, considering the applicant's abilities. In case of doubt, the disability assessor can consult with the occupational analyst

who prepared the job profile and the physician who examined the applicant. In case of acceptance of a job profile with flagged requirements, the disability assessor is expected to provide a written motivation of the acceptance decision based on the applicant's abilities.

The applicant's residual earnings capacity is considered to be greater than zero if at least three job profiles corresponding to three different occupations, are considered feasible by the disability assessor. Residual earnings capacity is then determined as the earnings level of the second-highest earning feasible job profile. The disability percentage is calculated as the ratio of the residual earnings capacity to the applicant's actual earnings prior to disability onset, multiplied by 100. This percentage determines disability benefit eligibility; a disability percentage less than 35 percent means that the applicant does not qualify for disability benefits. A disability percentage of 35-79 percent means the applicant qualifies for (partial) benefits, while a percentage greater than 80 entitles the applicant to full disability benefits.

Measuring Work Capacity in an American Sample

We adapted the Dutch Functional Abilities Questionnaire for self-administration over the internet, in English. We then fielded the adapted questionnaire plus questions on educational attainment and the presence of medical conditions to the nationally representative RAND American Life Panel (ALP) in May 2019 (N=2,657 respondents, 78% completion rate).

We then applied the automated pre-selection procedure, as described in UWV manuals, to our U.S. sample and the complete database of 5,479 job profiles in use on May 1, 2018, which we obtained from the UWV. The automated preselection procedure selects only those job profiles for which a respondent's abilities meet all job requirements. The absence of disability assessors in our research process meant that we only ran the automated preselection procedure to determine the set of feasible jobs, excluding all job profiles with flags. In an actual disability determination procedure, disability assessors might have resolved some of the flagged items to include additional job profiles in the feasible set, which could have the effect of increasing the estimated work capacity of our respondents. Other limitations of our approach include the self-administered nature of the Functional Abilities Questionnaire in the RAND ALP and a potential lack of similarity between the requirements of Dutch and American jobs. Nonetheless, the Dutch instrument is a comprehensive assessment of work ability (regardless of ultimate DI qualification) and our approach is a useful illustration of how work capacity evaluation works in the Netherlands.

Our current procedure to determine work capacity includes only categorical functional abilities. In subsequent analyses we will extend the set of functional abilities to also include

those measured continuously (e.g., in terms of duration, weight, and frequency). In addition to matching job profile requirements to these categorical functional abilities, we also matched on educational attainment and field of study.

Figure 1 shows the distribution of the number of occupations with at least one feasible job profile in the ALP sample. Note that while a large fraction of the sample are deemed able to do more than two-thirds of occupations in the database, there is a thick left tail, representing those with limited potential occupation sets.
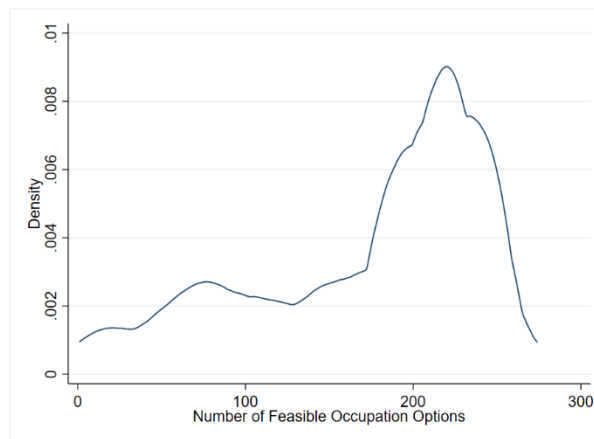
Figure 1. Estimated number of feasible occupations in the ALP sample
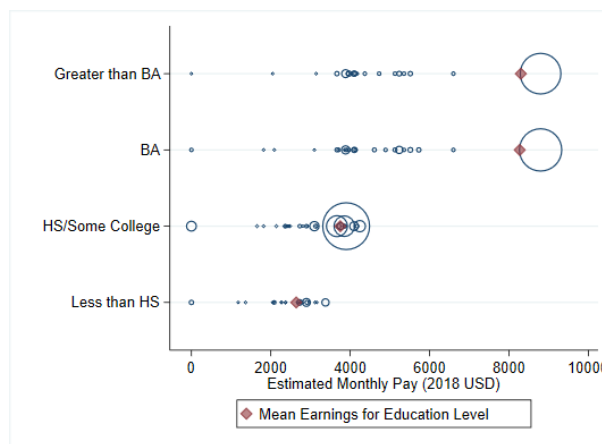
Figure 2. Estimated earnings capacity by educational attainment in the ALP sample, by weighted proportion of the sample

While Figure 1 reflects how variation in functional abilities (and educational attainment) translates into variation in the number of feasible occupations, Figure 2 shows the impact of functional abilities on estimated monthly earnings capacity (converted to 2018 U.S. dollars), conditional on educational attainment. Each horizontal sequence of circles in Figure 2 shows

the weighted proportion of respondents with a given estimated earnings capacity corresponding to the earnings of their highest earning feasible job profile. Note that variation in estimated earnings within each level of educational attainment primarily reflects variation in functional abilities (and partly by educational field).

Simulating the Sensitivity of Potential Earnings to Specific Functional Abilities

In the final part of our analysis, we simulate the impact of limitations to specific functional abilities on estimated earnings capacity. Specifically, for each functional ability and each respondent, we calculate their earnings capacity with and without a limitation to that ability, keeping all other functional abilities fixed at their observed values. We then ranked the functional abilities by the average reduction in estimated earnings capacity arising from the loss of each functional ability from a baseline of no limitation. Figure 3 shows the ten functional abilities with the highest declines in estimated earnings capacity if limited. Limitations in pen grip, speaking, and reading lead to the largest absolute earnings declines, suggesting that these abilities are required to work in the highest paying jobs in the Netherlands.
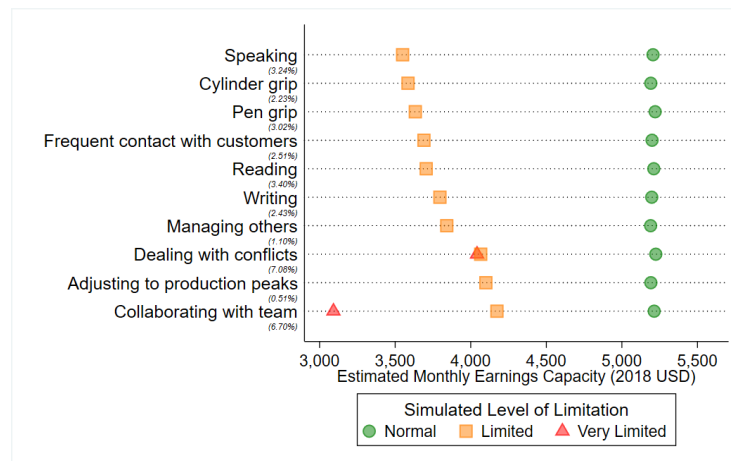
Figure 3. Simulated earnings capacity by functional limitation in the ALP sample

Finally, we conducted simulations separately for individuals who currently have each ability and those who do not (not shown). This allows us to identify the potential gains in earnings from workplace accommodation or rehabilitation if it were possible to fully eliminate the limitation, as well as the potential gains from fully preventing onset of a limitation to a given functional ability.

Reference

Maestas, Nicole, 2019. Identifying Work Capacity and Promoting Work: A Strategy for Modernizing the SSDI Program. *The ANNALS of the American Academy of Political and Social Science*, *686*(1), pp.93-120.

Panel 6: Health Shocks and Retirement

Moderator: Irena Dushi (U.S. Social Security Administration)

The Impact of Medical Spending Shocks on the Wealth and Insurance
Purchases of Older Americans
Eric French *(University College London), John Bailey Jones (Federal Reserve
Bank-Richmond) and Jeremy McCauley (University of Bristol)*

Economic Security in Retirement: Does Borrowing from Home Equity
Moderate the Impact of a Health Shock on Health Outcomes?
Stephanie Moulton*, Donald Haurin, Caezilia Loibl, and Joshua Joseph
(The Ohio State University)*

The Impact of Biopharmaceutical Innovation on Disability, Social Security
Recipiency, and Use of Medical Care of U.S. Community Residents
Frank R. Lichtenberg *(Columbia University)*

On the Distribution and Dynamics of Medical Expenditure among the Elderly

Karolos Arapakis

Univesity College London

Eric French

University of Cambridge,

Institute for Fiscal Studies

John Bailey Jones

Federal Reserve Bank of Richmond

Jeremy McCauley

University of Bristol

Abstract

Using data from the Health and Retirement Study (HRS), we estimate the stochastic process for total medical spending and its components. By focussing on dynamics, we consider not only the risk of catastrophic expenses in a single year, but also the risk of moderate but persistent expenses that accumulate into a catastrophic lifetime cost. We also assess the reduction in out-of-pocket medical spending risk provided by public insurance schemes such as Medicare or Medicaid.

1   Introduction

Despite nearly universal enrollment in the Medicare program, most elderly Americans still face the risk of catastrophic health care expenses. There are many gaps in Medicare coverage: for example, Medicare does not pay for long hospital and nursing home stays, and requires co-payments for many medical goods and services. Medical spending is thus a major financial concern among elderly households. In a recent survey, more affluent individuals were worried about rising health care costs than about any other financial issue (Merrill Lynch Wealth Management, 2012).

In this paper we assess the amount of medical spending risk faced by households and the reduction in out-of-pocket medical spending risk coming from public insurance programs such as Medicare or Medicaid. Even though numerous papers have documented the health cost risks that older Americans face in any given year, there have been relatively few that document the distribution of cumulative lifetime spending. Understanding these lifetime totals, however, is critical for assessing the income and savings adequacy of older households. Households care not only about the risk of catastrophic expenses in a single year, but also about the risk of moderate but persistent expenses that accumulate into catastrophic lifetime costs.

By using new data and methods, we significantly improve the measurement and assessment of this risk. In particular, this paper makes three important contributions.

First, we assemble medical spending data for multiple payors. We link out-of-pocket medical spending data from the Health and Retirement Study (HRS) to Medicare and Medicaid data from administrative records, giving us long panel measures of comprehensive medical spending for the age 65+ population.

Second, we estimate both the cross sectional distribution and intertemporal dynamics of medical spending with a specification more flexible than those used in previous estimates, namely the framework of Arellano et al. (2017) and De Nardi et al. (2020). We will use this model to predict the distribution of medical spending, both annual and cumulative, after age 65. This allows us to better understand the risks facing retired households.

Third, we model the share of medical spending that is paid by Medicare and Medicaid, and calculate the extent to which Medicare and Medicaid reduce lifetime medical spending. Using improved data and and a superior methodology allow us to better understand who benefits from Medicaid and Medicare.

We estimate dynamic models of health, mortality, and medical spending. Simulating our estimated models allows us to construct household histories and compute the distribution of total lifetime medical spending. Thus we can calculate the share of people who face catastrophic medical spending over the course of their lives.

We find that Medicare and Medicaid lowers average lifetime expenditures significantly. Medicaid covers the majority of the medical costs of the poorest households and significantly reduces their risk. Medicaid reduces the level and volatility of medical spending for high-income households to a smaller extent. For these households, Medicare is the dominant payor.

2   Data and Descriptive Statistics

We use HRS data matched with Medicare and Medicaid administrative records. To focus on the Medicare population, we focus on those ages 65 and older. We use data from 1998-2012, when we also have the Medicare and Medicaid records. Our sample selection procedures leave us with 23,274 household-year observations.

HRS: The HRS provides data on out-of-pocket medical spending, including nursing home care. The HRS also provides information on an individual's health and income, and allows us to identify their spouse, if they have one.

Administrative Medicare and Medicaid records: We link restricted Medicare fee-for-service (Part A and B) and Part D data for the years 1991-2016 (2006 was the first year of Medicare Part D) to the survey responses of consenting HRS participants. These records include total Medicare reimbursement amounts for inpatient, skilled nursing facility, home health, and hospice

claims (Medicare Part A) as well as outpatient, carrier (non-institutional medical care providers such as individual or group practitioners, non-hospital labs, and ambulances), and durable-medical-equipment claims for Medicare Part B.

As with the Medicare data, we are able to link restricted Medicaid data, allowing us to measure Medicaid expenditures for the years 1999-2012. These files contain information on Medicaid enrollment, service use, and expenditures.

Table 1: Medical spending by total expenditures and payor: Households with heads 65 or older

Total Spending Percentiles	Total Spending		Out-Of-Pocket		Medicare		Medicaid	
	Average Exp.	Pct. of Total	Average Exp.	Pct. of Total	Average Exp.	Pct. of Total	Average Exp.	Pct. of Total
All	14,500	100.0	2,200	100.0	10,000	100.0	1,500	100.0
95-100%	105,700	36.4	14,300	27.8	73,600	36.6	15,300	52.7
90-95%	52,100	18.0	6,700	13.0	37,800	18.8	6,700	23.0
70-90%	21,900	30.2	3,900	30.6	15,800	31.5	1,500	20.3
50-70%	7,200	10.0	2,100	16.5	4,400	8.8	200	3.0
0-50%	1,600	5.5	600	11.9	900	4.3	0.3	1.0

Notes: Total spending is the sum of Medicare, Medicaid, and out-of-pocket spending. Expenditures are expressed in 2014 dollars.

The first two columns of Table 1 show the sum of Medicare, Medicaid, and out-of-pocket spending by older households, sorted by total spending percentile, while the remaining 6 columns decompose this total by payor. Table 1 shows that Medicare and especially Medicaid benefits are concentrated among those with the highest expenses, helping to ensure against catastrophic spending. Another way to see this outcome is to note that at the bottom half of the spending distribution, about 38% ($600/$1600) of medical expenses are paid out of pocket, while at the top out-of-pocket expenditures cover only about 13.5% ($14,300/$105,700).

3 The Model

We estimate our model of lifetime medical spending in four steps. In the first step we regress total medical expenditures against age, health and family structure. In the second step we

estimate the stochasitic process for the component of medical expenses unexplained by age, health and family structure, the residuals from the first step. We use the framework Arellano et al. (2017) to estimate the process for these residuals in a flexible way. In the third step we estimate the link between total model spending and its components (i.e., out-of-pocket, Medicaid, and Medicare). In the fourth step we estimate a Markov Chain model of health and mortality and use it to forecast health and mortality over the retirement period. Then conditional on health and mortality, we forecast total medical spending and its components.

Medical Spending: We simultaneously estimate the cross sectional distribution and the intertemporal dynamics of medical spending using the non-parametric dynamic panel data estimator of Arellano et al. (2017), which allows for age dependence, non-normal permanent and transitory components, and non-linear persistence.

Consider a cohort of households indexed by i and denote by $t = 1, ..., T$ the age of the head. Let $M_{i,t}$ denote medical expenditures for household i at age t and $m_{i,t}$ its logarithm net of a set of variables such as health, age, and household structure variables, contained in $X_{i,t}$:

$$\ln M_{i,t} = X_{i,t}\gamma + m_{i,t}. \tag{1}$$

The residual $m_{i,t}$ is the sum of the persistent first-order Markov component $\eta_{i,t}$, and the transitory component $\varepsilon_{i,t}$.

$$m_{i,t} = \eta_{i,t} + \varepsilon_{i,t}, \quad \forall i \in \{1, ..., N\}, \forall t \in \{1, ..., T\} \tag{2}$$

We assume the transitory component is IID but place no restrictions on its distribution other than it be zero mean and satisffy the regularity conditions described in Arellano et al. (2017). Likewise, we impose only weak restrictions on the first-order Markov component $\eta_{i,t}$.

Out-of-pocket, Medicaid, and Medicare: We estimate the link between total medical spending $M_{i,t}$ and its out-of-pocket component by regressing out-of-pocket spending on total spending using non-linear least squares.

Health and Mortality: The health of each family member can take on one of four values: dead; in a nursing home; in bad health; or in good health. We assume that the transition probabilities for an individual's health depend on his or her current health, age, permanent income and gender. We estimate health/mortality transition probabilities by fitting the transitions observed in the HRS

to a multinomial logit model.

4 Results

Health and Longevity: Our estimates are similar to De Nardi et al. (2021) and so we do not report them here. Healthy people, rich people, and couples live longer than their unhealthy, poor, and single counterparts.

The Persistence of Medical Spending: Panel (a) of Figure 1 shows the estimated persistence of medical spending in the data. Formally, it is the average derivative of the conditional quantile function with respect to the shock. It shows how persistent medical spending is as a function of next period's shock and the percentile rank of today's medical spending.

    (a) HRS data   (b) model simulation   (c) persistent spending component η
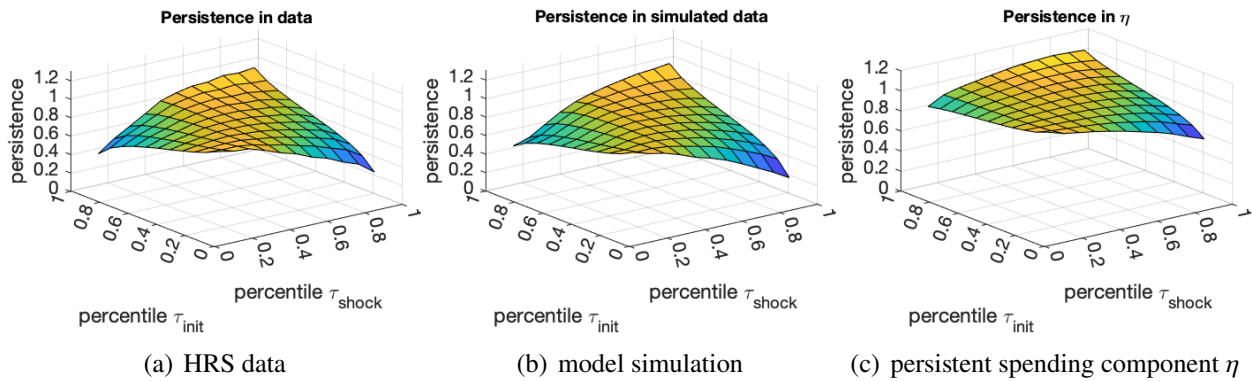
Figure 1: Persistence of medical spending.

Panel (a) shows that persistence is much lower (0.2) for large medical shocks among those with low initial medical spending. It is much higher, almost 1, for those with high initial spending and large shocks (the top point on the graph). What this means is that catastrophic medical spending is particularly persistent. It is also higher for those with low initial spending and small shocks (the bottom point on the graph). In short, there is low mobility in the tails, but higher mobility in the middle of the distribution. As a point of reference, the usual AR(1) often assumed in the literature implies that persistence would be constant.

Panel (b) shows persistence in the simulated data. The similarity of panels (a) and (b) shows that the model fits the data well.

The right panel shows persistence in the permanent component of medical spending η. Note that the persistence of η is much higher than for medical spending overall. Over much of its distribution, the persistence of η is close to 1, indicating that for severe health conditions, such as

dementia, medical spending is very persistent. It is these shocks, which cause high spending for many periods, which can drain a families resources.

Budget sets: Figure 2 shows the mapping from total expenditures to the out-of-pocket expenditures paid by households. We model the relationship as a piecewise linear function to capture that those with extremely low total spending are frequently paying for services not covered by Medicare, whereas those with high levels of spending often receive hospital care that is completely reimbursed by Medicare. As a result, at low levels of medical spending the household pays a high share out of pocket, whereas at high levels of medical spending very little is paid out of pocket for the additional care.
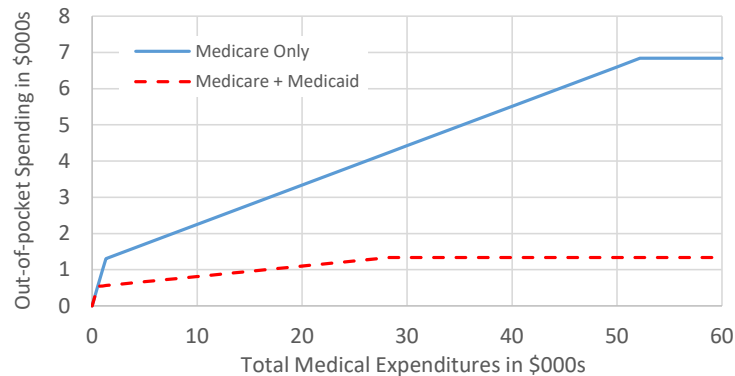
Figure 2: Out of pocket medical spending as a function of total medical spending

5 Conclusion

Medical spending is often high and persistent. We use a flexible state of the art methodlogy and high quality administrative data linked to survey data to estimate the process of lifetime medical spending. We find that medical spending has non-linear persistence and high dispersion.

Policy Implications: Relative to previous studies studies (e.g., French and Jones (2004)), we estimate more persistence in the tails. What this means is that previous studies likely understate the likelihood of multiple years of catastrophic medical spending. Public insurance schemes should be targeted to insure against these catastrophic risks.

References

Arellano, M., R. Blundell, and S. Bonhomme (2017). Earnings and consumption dynamics: A nonlinear panel data framework. *Econometrica 85*(3), 693–734.

De Nardi, M., G. Fella, and G. Paz-Pardo (2020). Nonlinear household earnings dynamics, self-insurance, and welfare. *Journal of the European Economic Association 18*(2), 890–926.

De Nardi, M., E. French, J. B. Jones, and R. McGee (2021). Why do couples and singles save during retirement? Technical report, National Bureau of Economic Research.

French, E. and J. B. Jones (2004). On the distribution and dynamics of health care costs. *Journal of Applied Econometrics 19*(6), 705–721.

Merrill Lynch Wealth Management (2012, February). Merrill Lynch Affluent Insights Survey fact sheet.

Economic Security in Retirement: Does Borrowing from Home Equity Moderate the Impact of a Health Shock on Health Outcomes?

Stephanie Moulton
John Glenn College of Public Affairs, The Ohio State University

Joshua Joseph
Division of Endocrinology, Diabetes and Metabolism, The Ohio State University Wexner Medical Center

Caezilia Loibl
Department of Human Sciences, The Ohio State University

Donald Haurin
Department of Economics, The Ohio State University

Prepared for the Annual Meeting of the Retirement and Disability Research Consortium
August 5 & 6, 2021

Economic Security in Retirement: Does Borrowing from Home Equity Moderate the Impact of a Health Shock on Health Outcomes?

Background

Health shocks pose a significant risk to economic security in retirement. About 35 percent of older adults are diagnosed with a major disease by age 65, rising to 65 percent by age 90 (Poterba et al. 2018). These health shocks are costly. While the majority of older adults receive Medicare, nearly 20 percent of health expenditures are paid out of pocket (DeNardi et al. 2016). Older adults often self-insure against these risks by accumulating wealth, including home equity. In this study, we ask: To what extent does home equity mitigate the economic burden created by a health shock, ultimately leading to better health outcomes?

In contrast to a life cycle model, older adults tend to only spend down home equity following an expense shock (Davidoff, 2010; Nakajima & Telyukova, 2019; Poterba & Venti, 2017a). Several recent studies document a decline in home equity after a health shock (Gilligan et al. 2018; Gupta et al. 2018; Poterba et al. 2018), with home equity being second only to formal health insurance for financing health related consumption after a health shock in older age (Dalton and LaFave 2017). These studies do not identify the extent to which liquidating home equity improves the older household's health following a shock.

An existing body of literature estimates the causal relationship between housing wealth and health outcomes generally, not limited to individuals with a health shock (Angrisani and Lee 2016; Costa-Font et al. 2019; Fichera & Gathergood 2016; Hamoudi and Dowd 2013; 2014). Similar to our approach, these studies rely on geographic and intertemporal variations in house prices to isolate the exogenous component of housing wealth, either through reduced form specifications that directly model the relationship between changes in house values or house prices on health outcomes (Angrisani and Lee 2016; Fichera & Gathergood 2016; Hamoudi and Dowd 2013; 2014) or by using geographic changes in house prices as an instrument for housing wealth (Costa-Font et al. 2019). While these papers tend to find a positive relationship between increases in housing wealth and health outcomes, they do not model the mechanisms through which this occurs—which is critical to inform policy. We expect that it is not simply the stock of home equity held by older adults that leads to better health outcomes, but the liquidation of home equity through borrowing following a health shock that leads to improved health outcomes.

Data, Sample Construction & Methods

We use data from 1998 to 2016 Health and Retirement Study (HRS) with geographic identifiers and sensitive health data, as well as the RAND HRS Longitudinal File 2016 (v2) which includes imputations for missing data on financial variables used in our analysis.[1] For this analysis, we limit our sample to homeowners in the HRS who have a health shock between 2002 and 2016. Following the approach used in prior studies (Smith 1999; 2005; Poterba et al 2017a; 2017b; 2018), we define a health shock as occurring when a respondent self-reports a new diagnosis of disease from 2002 to 2016. Of the 28,729 homeowners in the HRS during our study period, we limit the sample to respondents diagnosed with one of four major diseases that are common and costly: heart disease (N=3,424), diabetes (N=2,667), lung disease (N=1,455), and cancer (N=2,056). Our primary estimation sample is further restricted to respondents age 65 and older at the time of their health shock to hold constant Medicare eligibility.

The focal outcome for this study is a disease-specific indicator of a health shock being adequately controlled in the waves after the health shock. To construct this outcome, we use restricted biomarker and physical health indicators collected from HRS respondents every four years, beginning in 2006 or 2008 (Crimmins et al., 2017), with up to three periods of available data per respondent (through 2014 or 2016).[2] Our estimation sample with biomarker data includes 2,172 respondents (3,932 respondent-wave observations) who were under age 65 at the time of diagnosis, and 4,013 respondents (6,830 respondent-wave observations) who were age 65 or older at the time of diagnosis. While biological markers provide objective measures of health, a large literature exists that examines measures of self-assessed, subjective health. We use the HRS survey question for self-rated health (Likert scale ranging from poor, fair, good, very good and excellent) as an alternative outcome in our study.

Our first empirical specification models the reduced form relationship of time invariant home equity in the wave prior to a disease diagnosis (E_i) and whether or not a disease is uncontrolled (0,1) in the waves after the diagnosis (Y_{it}). We control for time invariant health levels as of the wave prior to diagnosis including comorbidities, self-reported health, smoking,

---

[1] The RAND HRS Longitudinal File is an easy-to-use dataset based on the HRS core data. This file was developed at RAND with funding from the National Institute on Aging and the Social Security Administration.

[2] Indicators and thresholds for a disease being uncontrolled are as follows: (1) cancer, C-Reactive Protein $\geq$5 mg/L; (2) diabetes, Hemoglobin A1c $\geq$7%; (3) heart disease, Blood Pressure $\geq$140/$\geq$90 mmHg; and (4) lung disease, Peak Expiratory Flow Rate $\leq$50% of normal functioning.

functional and cognitive limitations, mental health, and presence and types of health insurance (H_i), as well as income and liquid wealth (A_i). X_i is a set of time invariant demographic control variables measured as of the wave prior to the diagnosis, including race/ethnicity, sex, education, marital status, household size, number of living children, region and urban-rural residence, as well as age and age-squared at the time of diagnosis and the calendar year of the diagnosis. W_{it} is a set of time varying control variables including dummies for the wave since the diagnosis and calendar year dummies, μ_i is a person-specific effect that captures unobserved individual factors, and η_{it} is a transitory shock. We include a vector of indictors for disease type (D_i) that take the value of "1" for the new disease at time 0. We estimate Equation (1) using a linear probability model, estimated with individual random effects.[3]

$$Y_{it} = \beta_0 + \beta_1 E_i + \beta_2 H_i + \beta_3 A_i + \beta_4 X_i + \beta_5 W_{it} + \beta_6 D_i + \mu_i + \eta_{it} \qquad (1)$$

Our second specification includes the lagged amount of home equity extracted through borrowing (B_{it-1}), modeled as an endogenous choice. Time varying controls include lagged income and liquid wealth (A_{it-2}), as well as other time varying controls (X_{it-2}) including changes in marital status, death of a spouse, region and urban-rural residence, household size, number of living children, presence and type of health insurance, and spouse health levels including comorbidities, self-reported health, and physical limitations. We lag the time-varying control variables two waves, as they are also included in the first stage regression predicting the amount borrowed at t-1. We estimate our models with random effects and include vectors of time invariant variables (H_i), (X_i), as well as disease type (D_i).[4]

$$Y_{it} = \beta_0 + \beta_1 B_{it-1} + \beta_2 A_{it-2} + \beta_3 X_{it-2} + \beta_4 W_{it} + \mu_i + \eta_{it} \qquad (2)$$

---

[3] In supplemental analyses not shown, we re-estimated equation (1) using a probit regression model and found substantively similar results (available by request).

[4] Results from a Hausman test with fixed versus random effects were not significant, indicating random effects are statistically more efficient and thus preferred ($chi2 = 20.290$, $p = 0.998$). As a robustness test, we present results from a fixed effects specification that controls for all possible unobserved time-invariant confounders.

We estimate Equation (2) using a two-stage least squares panel model, with the first stage estimating the amount of home equity extracted through borrowing.[5] One instrument for home equity extraction is the lagged local area two-year percent change in ZIP code house prices as measured by the FHFA House Price Index (ΔHPI), from t-2 to t-1 (FHFA, 2020). We also include as an instrument the level of house prices in the ZIP code at t-2 drawn from the Zillow Home Value Index (ZHVI). Our identifying assumption is that geographic variation in ΔHPI and house price levels at a given point in time are unrelated to health outcomes (conditional on all controls) except through their effect on extracting home equity. Our third instrument is an indicator of being borrowing constrained at t-2, which we measure as having a loan-to-value (LTV) ratio of 80 percent or higher, as a high LTV makes it difficult to be approved for additional borrowing.

Results

We begin by examining trends in financial variables in the waves following a new diagnosis. All trends adjust for age, age-squared, and the year of the new diagnosis. The omitted period is the wave prior to the shock. Figure 1 charts mean health care expenditures and household earnings for homeowners with a new diagnosis of diabetes, heart disease, lung disease, or cancer on or after age 65. Out of pocket annual health expenditures increase by more than $2,126 per year beginning the wave of diagnosis, relative to a baseline level of $1,927. This increase in health expenditures is not offset by an increase in earnings, as earnings remain flat post diagnosis. By contrast, as shown in Figure 2, there is a statistically significant increase in non-housing debt post diagnosis and significant decrease in home equity beginning three waves post diagnosis.

Table 1 presents key coefficients from the reduced form regression specifications in Equation (1) for home equity held prior to the shock on the probability of a disease being uncontrolled. Results show that home equity held in the wave prior to the health shock is not statistically significantly associated with the probability of the disease being uncontrolled following the diagnosis for those age 65 and older at the time of diagnosis (Column 1) or for those under the age of 65 at the time of diagnosis (Column 2). Column 3 presents results where the outcome is self-rated health, measured on a scale of 1 to 5. We find that a $100,000 dollar

---

[5] In our primary specifications for Equation (2), home equity extracted (B_{it-1}) is limited to the amount extracted through borrowing on a mortgage. In an alternative specification, we estimate our models replacing B_{it-1} with a combined indicator of the total amount of equity extracted through borrowing and home sale as of t-1. Instrument tests for this model meet generally accepted thresholds.

increase in pre-diagnosis home equity is associated with a significant 0.02 scale-point increase in self-rated health (p = 0.005). Home equity held prior to the health shock thus has a small, statistically significant positive effect on self-reported health following the diagnosis.

Table 2 summarizes key results for Equation (2), treating equity extraction as endogenous. For those age 65 and older at time of diagnosis, we find a significant, negative effect of new mortgage borrowing after the diagnosis on the probability of the disease being uncontrolled (Column 1), with instruments in the first stage meeting generally accepted criteria for valid identification. We estimate that each additional $10,000 in new mortgage borrowing reduces the likelihood of the disease being uncontrolled by 7.8 percentage-points-- a 23 percent decrease in the 34 percentage point base rate of not controlling a disease. Column 2 presents the results of the model where equity extraction is measured as borrowing through a mortgage or home sale, finding slightly weaker but still negative and significant effects. Column 3 indicates that the effects are not statistically significant for those under the age of 65 at the time of diagnosis. Column 4 presents the results for the model where the outcome is self-rated health, finding each additional $100,000 in mortgage borrowing is associated with a marginally significant (p = 0.082) 0.58 scale-point increase in self-rated health.

Conclusions

While prior studies find a reduced form relationship between housing wealth and health outcomes, ours is the first study to document a significant relationship between liquidating housing wealth following a health shock and the ability to better manage a disease in older age. In line with prior literature, we find an increase in health costs following a health shock, particularly for adults age 65 and older. Given that retirement income is relatively stable, funding for the additional expenses must be from liquid wealth or borrowing from assets, including home equity. Thus the ability to liquefy home equity is critical to health outcomes, but such access is limited when using standard mortgage loans as older adults are often constrained by lenders' loan to value and debt to income criteria (Mayer and Moulton 2021). Further, mortgage borrowing and loan balances prior to retirement have risen in recent decades, raising concerns about future cohorts' ability to access home equity (Brown et al. 2019; Haurin et al. 2019; Lusardi et al 2017; 2020). The ability to borrow from home equity thus affects health outcomes, which affects expected lifetimes, with consequent implications for the aggregate size of Social Security retirement benefits payments.

Figure 1: Trends in health expenses and individual earnings following a diagnosis on or after 65
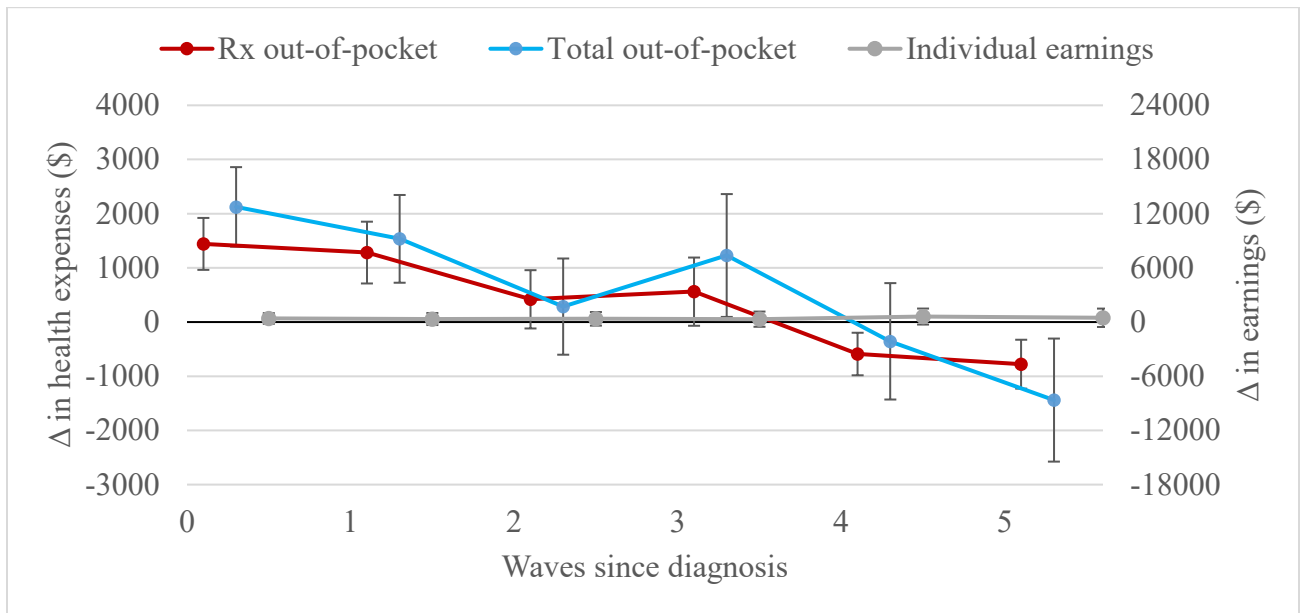
Notes: Author's calculations of average changes in total out of pocket prescription drug spending, total out of pocket health spending, and individual earned income using 1998-2016 HRS data. Estimates are from an event study regression model that controls for age, age-squared, the year of the new diagnosis, and the wave since diagnosis. The omitted period is the wave prior to the diagnosis and thus the change estimates are relative to the levels in the wave prior to diagnosis of a new disease.

Figure 2: Trends in assets, debts, and home equity following a diagnosis on or after 65
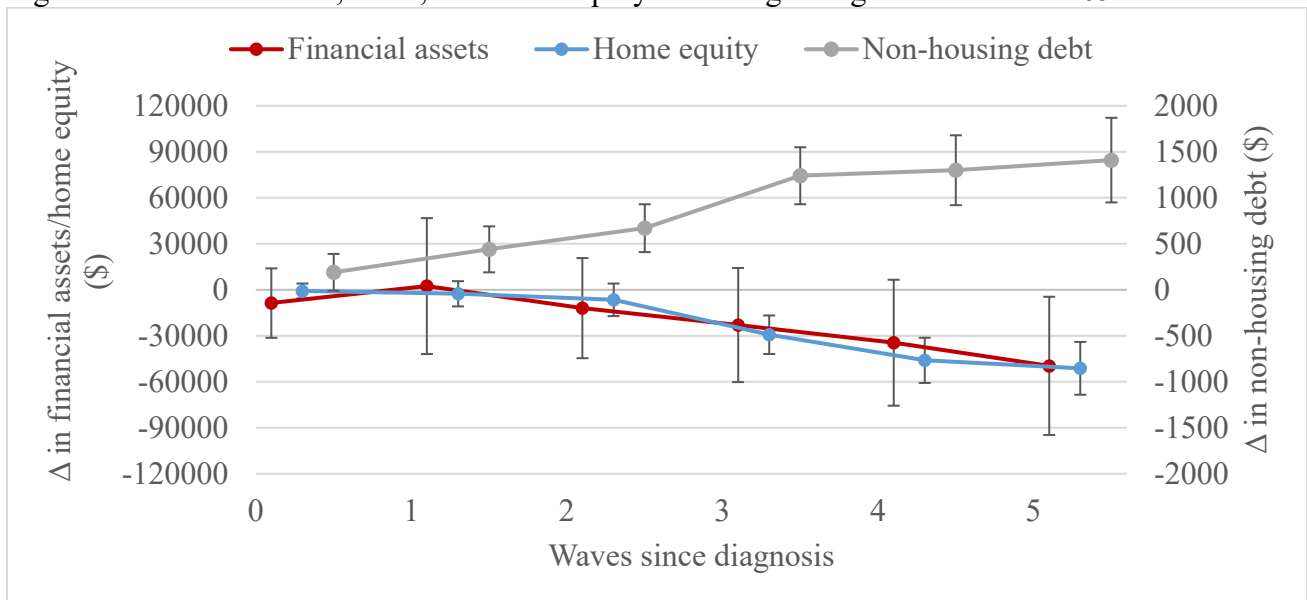
Notes: Author's calculations of average changes in financial assets, home equity, and non-housing debt using 1998-2016 HRS data. Estimates are from an event study regression model that controls for age, age-squared, the year of the new diagnosis, and the wave since diagnosis. The omitted period is the wave prior to the diagnosis and thus the change estimates are relative to the levels in the wave prior to diagnosis of a new disease.

7

Table 1: Random effects linear probability models predicting disease outcomes on time-invariant home equity held prior to the diagnosis

	(1) Biomarker uncontrolled (0/1) Age ≥ 65	(2) Biomarker uncontrolled (0/1) Age < 65	(3) Self-rated health (1-5) Age ≥ 65
Home equity prior to diagnosis ($100k)	-0.003 (0.004)	-0.002 (0.006)	0.020** (0.007)
N (person-waves) =	5,093	2,957	12,826

Notes: **p<0.01, *p<0.05, +p<0.10 (standard errors in parentheses). Controls (not shown) include vectors of health, financial, and demographic indicators. All control variables are measured in the wave prior to the diagnosis, with the exception of time varying wave and age indicators.
Source: 2006-2016 waves of the Health and Retirement Study. Sample is restricted to homeowners newly diagnosed with cancer, diabetes, heart disease, or lung disease from 2002-2016.

Table 2: Random effects linear probability models predicting disease outcomes on time-varying post-diagnosis endogenous home equity extraction

	(1) Biomarker uncontrolled (0/1) Age ≥ 65	(2) Biomarker uncontrolled (0/1) Age ≥ 65	(3) Biomarker uncontrolled (0/1) Age< 65	(4) Self-rated health (1-5) Age ≥ 65
Mortgage borrowing ($100k) t-1	-0.781* (0.385)		0.233 (0.276)	0.585+ (0.337)
Equity extracted ($100k) t-1		-0.547+ (0.295)		
Instrumental variables				
Δ HPI (%), t-1 – t-2	0.041* (0.018)	0.111* (0.047)	0.067+ (0.035)	0.011 (0.008)
Loan-to-value ≥ 80% (0/1), t-2	-0.120*** (0.026)	-0.073*** (0.018)	-0.118*** (0.022)	-0.154*** (0.019)
House value ($100k), t-2	0.003 (0.003)	0.004 (0.004)	0.013 (0.008)	0.008+ (0.005)
N (person-waves) =	4,126	4,126	2,344	10,373
First-stage instrument tests				
Cragg-Donald F statistic	10.968	11.012	6.655	34.391
Under-identification test	13.633**	15.258***	29.287***	40.229***
Hansen-J statistic	1.279	1.82	1.771	0.953

Notes: **p<0.01, *p<0.05, +p<0.10 (standard errors in parentheses). Controls (not shown) include vectors of health, financial, and demographic indicators. All control variables are time varying and lagged two waves, with the exception of health and demographic indicators measured in the wave prior to diagnosis.
Source: 2006-2016 waves of the Health and Retirement Study. Sample is restricted to homeowners newly diagnosed with cancer, diabetes, heart disease, or lung disease from 2002-2016.

References

Angrisani, Marco, and Jinkook Lee. 2016. "Health Effects of Short-Term Fluctuations in Macroeconomic Conditions: The Case of Hypertension for Older Americans." *Health Economics* 25: 113-125.

Brown, Meta, Donghoon Lee, Joelle Scally, and Wilbert van der Klaauw. 2020. "The Graying of American Debt." In *Remaking Retirement*, pp. 35-59. Oxford University Press.

Crimmins, Eiellen, Faul, Jessica, Thyagarajan, Bharat, and Weir, David. 2017. *Venous Blood Collection and Assay Protocol in the 2016 Health and Retirement Study*. Survey Research Center, Institute for Social Research, University of Michigan.

Costa-Font, Joan, Richard G. Frank, and Katherine Swartz. 2019. "Access to Long Term Care after a Wealth Shock: Evidence from the Housing Bubble and Burst." *The Journal of the Economics of Ageing*, 13: 103-110.

Dalton, Michael, & LaFave, Daniel. 2017. "Mitigating the Consequences of a Health Condition: The Role of Intra-And Interhousehold Assistance." *Journal of Health Economics*, 53, 38-52.

Davidoff, Tom. 2010. "Home Equity Commitment and Long-Term Care Insurance Demand." *Journal of Public Economics*, 94(1), 44-49.

De Nardi, Mariacristina, Eric French, John Bailey Jones, and Jeremy McCauley. 2016. "Medical Spending of the U.S. Elderly." *Fiscal Studies*. 37: 717-747

Fichera, Eleonora, and John Gathergood. 2016. "Do Wealth Shocks affect Health? New Evidence from the Housing Boom." *Health Economics*, 25(S2), 57-69.

Gilligan, Adrienne M., David S. Alberts, Denise J. Roe, and Grant H. Skrepnek. 2018. "Death or Debt? National Estimates of Financial Toxicity in Persons with Newly-Diagnosed Cancer." *The American Journal of Medicine* 131, 10: 1187-1199.

Gupta, Arpit and Morrison, Edward R. and Fedorenko, Catherine and Ramsey, Scott. 2018. "Leverage, Default, and Mortality: Evidence from Cancer Diagnoses." Columbia Law and Economics Working Paper No. 514, Columbia Business School Research Paper No. 15-35, Available at SSRN: https://ssrn.com/abstract=2583975 or http://dx.doi.org/10.2139/ssrn.2583975

Hamoudi, Amar, and Jennifer Beam Dowd. 2013. "Physical Health Effects of the Housing Boom: Quasi-Experimental Evidence From the Health And Retirement Study." *American Journal of Public Health* 103.6: 1039-1045.

Hamoudi, Amar, and Jennifer Beam Dowd. 2014. "Housing Wealth, Psychological Well-Being, and Cognitive Functioning of Older Americans." *Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 69(2): 253-262.

Haurin, Donald, Cazilia Loibl, and Stephanie Moulton. 2019. "Debt Stress and Mortgage

Borrowing in Older Age: Implications for Economic Security in Retirement." Working Paper prepared for the Retirement Disability Research Consortium, University of Wisconsin.

Lusardi, Annamaria, Olivia S. Mitchell, and Noemi Oggero. 2017. "Debt and Financial Vulnerability on the Verge of Retirement." No. w23664. National Bureau of Economic Research.

Lusardi, Annamaria, Olivia S. Mitchell, and Noemi Oggero. 2020. "Debt Close to retirement and its Implications for Retirement Wellbeing." In O.S. Mitchell and A. Lusardi (eds.), *Remaking Retirement: Debt in an Aging Economy*. Oxford, UK: Oxford University Press, pp. xxx-xxx

Nakajima, Makoto and Telyukova, Irina. 2019. "Home Equity in Retirement." FRB of Philadelphia Working Paper No. 19-50. Available at SSRN: https://ssrn.com/abstract=3502648

Poterba, James., and Venti, Steven. 2017. "Financial Well-being in Late Life: Understanding the Impact of Adverse Health Shocks and Spousal Deaths." Washington: Center for Retirement Research at Boston College.

Poterba, James, Venti, Steven, & Wise, David. 2018. "Longitudinal Determinants of End-of-Life Wealth Inequality." *Journal of Public Economics*, 162, 78-88.

The impact of biopharmaceutical innovation on disability,
Social Security recipiency, and use of medical care of
U.S. community residents, 1998-2015

Frank R. Lichtenberg, Ph.D.

frank.lichtenberg@columbia.edu

Columbia University,
National Bureau of Economic Research, and CESifo

Background

Numerous studies have shown that the use of certain drugs can reduce disability. For example, etanercept (approved by the FDA in 1998) was shown to reduce brain inflammation and neurological disabilities in stroke victims (Technology News and Literature 2011). Long-term treatment with siponimod (approved by the FDA in 2019) reduced the risk of disability progression of patients with secondary progressive multiple sclerosis (Kappos et al 2018). And people taking new migraine medications experienced about 50% fewer migraine headache days per month, compared with people who weren't taking them (Harvard Health Letter 2019). In this study, we attempt to determine the *overall* impact that pharmaceutical innovation had on disability, Social Security recipiency, and the use of medical services of U.S. community residents during the period 1998-2015.[1]

Methods

The research design of the study is depicted in Figure 1. As shown there, the econometric models we estimate include medical condition and year fixed effects, so the effect of biopharmaceutical innovation is identified by differences across medical conditions in the *growth* in the lagged number of drug classes ever approved. The heterogeneity of biopharmaceutical innovation is illustrated by Figure 2, which shows the number of World Health Organization Anatomical Therapeutic Chemical Classification System[2] (WHO ATC) ATC4 chemical subgroups ever FDA-approved for 12 diseases during the period 1995-2015. The same number (13) of chemical subgroups had ever been approved for all 12 diseases by 1995. During the next 20 years, 10 new chemical subgroups used to treat diabetes mellitus without complications were approved, 5 new chemical subgroups used to treat chronic kidney disease were approved, and no new chemical subgroups used to treat menstrual disorders were approved.

[1] A previous study (Lichtenberg 2019a) examined the impact of access to prescription drugs on disability in 11 European countries, and showed that, in general, the larger the number of drugs for a disease that were launched during 1982-2015 in a country, the lower the average disability in 2015 of patients with that disease in that country, controlling for the average level of disability in each country and from each disease, and the number of patients with the disease and their mean age.

[2] The complete ATC classification system can be viewed on Wikipedia (2021).

The measure of pharmaceutical innovation is CUM_CLASS$_{c,t-k}$: the number of *classes* (WHO ATC4 chemical subgroups) of drugs used to treat medical condition c ever approved by the FDA by the end of year t-k. An alternative measure of pharmaceutical innovation is CUM_DRUG$_{c,t-k}$: the number of *drugs* (WHO ATC5 chemical substances) used to treat medical condition c ever approved by the FDA by the end of year t-k. We found that our measures of disability, Social Security recipiency, and use of medical care are much more strongly (inversely) related to CUM_CLASS$_{c,t-k}$ than they are to CUM_DRUG$_{c,t-k}$. This difference is consistent with Lanthier et al's (2013) finding that 70% of first-in-class drugs are priority-review drugs—the FDA believes that they offer a "significant improvement" compared with products already on the market—while only 32% of non-first-in-class drugs are priority-review drugs.

We allow the effect of pharmaceutical innovation (entry of new drug classes) to be subject to a lag of up to 15 years, because utilization of recently-launched drug classes tends to be lower than utilization of drug classes launched many years earlier.

Data sources

Data on all variables shown in Figure 1, except data on pharmaceutical innovation, were obtained from the Full-Year Consolidated Data files and Medical Conditions files of the 1998-2015[3] waves of the Medical Expenditure Panel Survey (MEPS), a set of large-scale surveys of families and individuals, their medical providers, and employers across the United States (Agency for Healthcare Research and Quality 2021a). MEPS is the most complete source of data on the cost and use of health care and health insurance coverage.   Table 3 shows the 20 most prevalent medical conditions in 2015.

Data on the FDA approval years of drugs (including their ATC codes) were obtained from the DrugCentral 2021 online drug compendium (Division of Translational Informatics at University of New Mexico 2021). Data on approved indications of prescription drugs were obtained from Thériaque (Centre National Hospitalier d'Information sur le Médicament 2021). In the Thériaque database, indications are coded by ICD10 code.   We used the Clinical

---

[3] MEPS data are available through 2018, but the coding of medical conditions changed after 2015.

Classifications Software Refined for ICD10-CM-Diagnoses (Agency for Healthcare Research and Quality 2021b) to map Thériaque ICD10 codes to MEPS Clinical Classification Codes.

Results

Almost all of the estimates indicate that the probability of disability, Social Security recipiency, and medical care utilization is inversely related to the number of drug classes previously launched. The length of the estimated lag is generally 6-9 years, which is not surprising, due to the gradual diffusion of new drug classes. The effect of biopharmaceutical innovation related to a medical condition on the overall health of a person with that condition depends on the number of (other) medical conditions a person has: the smaller the number of conditions, the larger the effect.

The weighted (by condition prevalence) mean number of drug classes previously launched increased during our sample period, 1998-2015. Our estimates enable us to estimate what the rates of disability, Social Security recipiency, and medical care utilization would have been in the absence of that increase in the number of drug classes previously launched. The difference between the counterfactual, "no innovation," rate and the actual rate in 2015 can then be used to calculate the reduction in disability, Social Security recipiency, and medical care utilization in 2015 attributable to previous pharmaceutical innovation. These estimates are shown in Table 2.

We estimate that if the number of drug classes ever approved had not increased from 1988 to 2006, about 1.1 million (1.6%) more Americans would have had a limitation in 2015. Previous pharmaceutical innovation is estimated to have yielded larger percentage reductions (between 2.9% and 4.5%) of other outcomes. For example, previous innovation is estimated to have reduced the number of people who were completely unable to work at a job, do housework, or go to school in 2015 by 4.5%. But this outcome is much less common than having any limitation, so the estimated reduction in 2015 prevalence of this outcome is smaller: about 718 thousand people.

Previous innovation is estimated to have reduced the number of people receiving SSI in 2015 by 247 thousand (3.1%), and the number of people receiving Social Security by 984 thousand (2.0%).

We perform similar calculations for condition-specific measures of disability and medical care utilization. 134 million medical conditions caused one or more bed days in 2012.[4] Previous innovation is estimated to have reduced prevalence of bed days by 5.6%; due to that innovation, 7.6 million fewer medical conditions are estimated to have caused bed days in 2012. Previous innovation is also estimated to have caused substantial (> 4.0%) reductions in home health visits (9.2%), inpatient events (5.7%), missed school days (5.1%), and outpatient events (4.1%).

We can estimate the value in 2015 of some of the reductions in disability, Social Security recipiency, and use of medical care attributable to previous pharmaceutical innovation. These estimates are shown in Table 3. We estimate that new drug classes launched during 1988-2006 reduced the number of people who were unable to work in 2015 by 512,337 (3.9%). According to the Bureau of Labor Statistics' Quarterly Census of Employment and Wages,[27] annual wages per employee in 2015 were $52,942. So, the value of the reduction in inability to work may have been about $27 billion (= 512,337 * $52,942). Also, according to MEPS, total SSI expenditure in 2015 was $73.6 billion, and we estimate that new drug classes launched during 1988-2006 reduced the number of people who received SSI in 2015 by 3.1%, so the reduction in SSI expenditure may have been about $2.3 billion (= 3.1% * $73.6 billion). The reduction in Social Security expenditure may have been $14.0 billion (= 2.0% * $713 billion).

The reduction in hospital expenditure had the greatest value. We estimate that innovation reduced the number of 2015 inpatient events by 5.7%. According to the CMS National Health Expenditure Accounts,[28] total U.S. hospital expenditure was $989 billion in 2015, so the reduction in hospital expenditure may have been $56.1 billion (= 5.7% * $989 billion). The estimated reductions in expenditure on home health care, outpatient events, and emergency room events are $8.2 billion, $5.5 billion, and $1.5 billion, respectively. The sum of 7 sources of value is $115 billion.[5]

---

[4] MEPS discontinued providing data on bed days, school loss days, and work loss days after 2012, so for these 3 measures, actual prevalence is estimated for 2012.

[5] To the extent that SSI and Social Security replace lost wages, this figure may be overstated due to "double-counting". If we exclude SSI and Social Security, the sum of the sources of value is about $99 billion.

Discussion

The costs, as well as the benefits, of pharmaceutical innovation should be considered. Data from the IQVIA MIDAS database indicate that 2015 expenditure on drug classes that were first approved by the FDA during 1989-2006 was $127 billion.[6] This is 10% larger than the sum of the 7 sources of value. However, for a number of reasons, the costs are likely to be lower, and the benefits are likely to be larger, than these figures. Regarding costs: (1) Entry of new drugs reduces utilization of older drugs. (2) Prices of old (generic) drugs tend to be reduced by entry of new drugs (Lichtenberg 2021). Regarding benefits: (1) The cost figure ($127 billion) includes nursing home drug cost, but the benefit figure is based only on community residents; it does not include benefits to nursing home residents.[7] (2) The total value figure shown in Table 8 does not include the value of some of the disability reductions we identified (e.g. reduced cognitive limitations and bed days), whose value is more difficult to measure. (3) The total value figure shown in Table 8 does not include the value of increased longevity resulting from pharmaceutical innovation, which may be far larger (Lichtenberg 2019b).

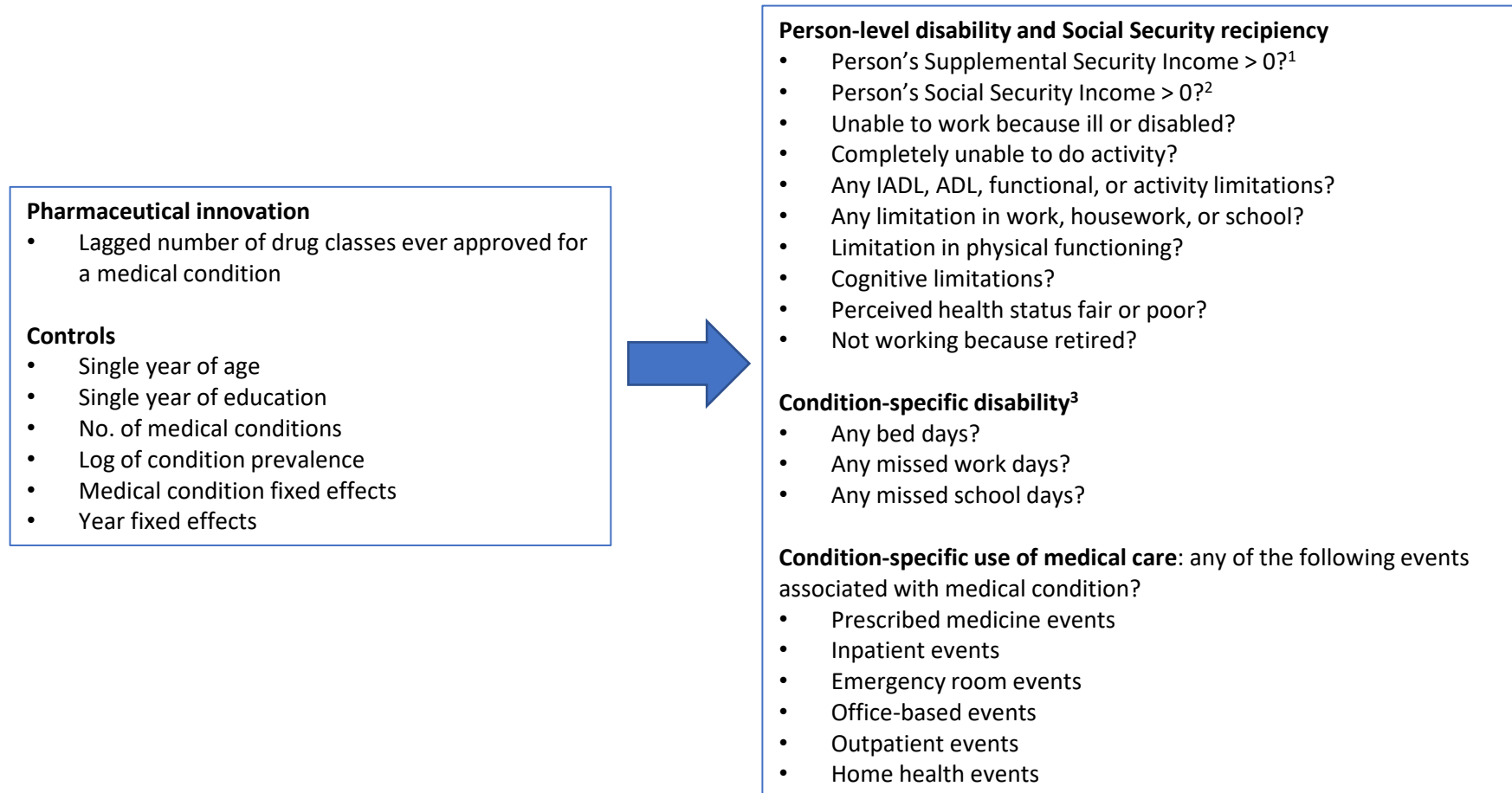[6] This is 38% of the IQVIA figure for total prescription drug expenditure in 2015 ($331 billion), which is quite similar to the CMS National Health Expenditure Accounts estimate of total prescription drug expenditure ($324 billion).

[7] A previous study (Lichtenberg 2012) examined the effect of pharmaceutical innovation on the functional limitations of nursing home residents.

References

Agency for Healthcare Research and Quality (2021a). Medical Expenditure Panel Survey (MEPS).

Agency for Healthcare Research and Quality (2021b). Clinical Classifications Software Refined for ICD10-CM-Diagnoses.

Centre National Hospitalier d'Information sur le Médicament (2021). Thériaque.

Division of Translational Informatics at University of New Mexico (2021). DrugCentral 2021 online drug compendium.

Harvard Health Letter (2019). Are the new migraine medications working?

Kappos L, et al (2018). Siponimod versus placebo in secondary progressive multiple sclerosis (EXPAND): a double-blind, randomised, phase 3 study. *Lancet* 391(10127):1263-1273. doi: 10.1016/S0140-6736(18)30475-6.

Lanthier M, Miller KL, Nardinelli C, Woodcock J (2013). An Improved Approach to Measuring Drug Innovation Finds Steady Rates of First-In-Class Pharmaceuticals, 1987–2011. *Health Affairs* 32 (8), August.

Lichtenberg FR (2012). The effect of pharmaceutical innovation on the functional limitations of elderly Americans: evidence from the 2004 National Nursing Home Survey. *Advances in Health Economics and Health Services Research 23*, 71-99.

Lichtenberg FR (2019a). The impact of access to prescription drugs on disability in eleven European countries. *Disability and Health Journal*, 12(3): 375-386 (July).

Lichtenberg FR (2019b). How many life-years have new drugs saved? A 3-way fixed-effects analysis of 66 diseases in 27 countries, 2000-2013. *International Health* 11(5): 403–416 (September).

Lichtenberg FR (2021). Are drug prices subject to creative destruction? Evidence from the U.S., 1997-2017. *Health Economics*, published online 13 May.

Technology News and Literature (2011). Drug Reduces Stroke Victim Brain Inflammation, Disability.

Wikipedia (2021). Anatomical Therapeutic Chemical Classification System.

Figure 1
Research design of this study

Pharmaceutical innovation
- Lagged number of drug classes ever approved for a medical condition

Controls
- Single year of age
- Single year of education
- No. of medical conditions
- Log of condition prevalence
- Medical condition fixed effects
- Year fixed effects

Person-level disability and Social Security recipiency
- Person's Supplemental Security Income > 0?[1]
- Person's Social Security Income > 0?[2]
- Unable to work because ill or disabled?
- Completely unable to do activity?
- Any IADL, ADL, functional, or activity limitations?
- Any limitation in work, housework, or school?
- Limitation in physical functioning?
- Cognitive limitations?
- Perceived health status fair or poor?
- Not working because retired?

Condition-specific disability[3]
- Any bed days?
- Any missed work days?
- Any missed school days?

Condition-specific use of medical care: any of the following events associated with medical condition?
- Prescribed medicine events
- Inpatient events
- Emergency room events
- Office-based events
- Outpatient events
- Home health events

1. Supplemental Security Income is a Federal income supplement program funded by general tax revenues (not Social Security taxes). It is designed to help aged, blind, and disabled people, who have little or no income. It provides cash to meet basic needs for food, clothing, and shelter.

2. Based on their analysis of the 2001 OASDI Public Use Microdata File, Pizer et al found that 80% of people ages 25–61 with Old Age and Survivors Disability Income (Social Security) receive it because of disability.

3. Condition-specific disability data are available for the years 1997-2012.

Figure 2
Number of WHO ATC4 chemical subgroups ever FDA-approved for 12 diseases, 1995-2015

Legend:
- 6 Hepatitis
- 35 Cancer of brain and nervous system
- 49 Diabetes mellitus without complication
- 100 Acute myocardial infarction
- 135 Intestinal infection
- 137 Diseases of mouth; excluding dental
- 151 Other liver diseases
- 153 Gastrointestinal hemorrhage
- 156 Nephritis; nephrosis; renal sclerosis
- 158 Chronic kidney disease
- 171 Menstrual disorders
- 217 Other congenital anomalies

Source: Author's calculations based on data in DrugCentral 2021 online drug compendium and Thériaque database.

Table 1

20 most prevalent medical conditions, 2015

Clinical Classification Code	LABEL	UNWEIGHTED frequency	WEIGHTED frequency
98	ESSENTIAL HYPERTENSION	7,006	70,849,016
204	OTHER NON-TRAUMATIC JOINT DISORDERS	6,644	68,644,747
126	OTHER UPPER RESPIRATORY INFECTIONS	6,201	66,810,191
53	DISORDERS OF LIPID METABOLISM	5,264	56,623,122
205	SPONDYLOSIS, INTERVERTEBRAL DISC DIS	3,622	40,118,572
259	RESIDUAL CODES, UNCLASSIFIED	3,738	39,698,327
651	ANXIETY DISORDER	3,391	38,508,722
657	MOOD DISORDERS	3,158	33,769,084
211	OTHER CONNECTIVE TISSUE DISEASE	3,107	33,048,921
134	OTHER UPPER RESPIRATORY DISEASE	3,358	32,163,836
49	DIABETES MELLITUS WITHOUT COMPLICATIONS	3,228	29,160,284
200	OTHER SKIN DISORDERS	2,311	25,937,890
128	ASTHMA	2,422	22,238,337
48	THYROID DISORDERS	1,804	21,961,595
138	ESOPHAGEAL DISORDERS	1,880	21,107,407
244	OTHER INJURIES AND CONDITIONS DUE TO	2,017	20,309,261
255	ADMINISTRATIVE/SOCIAL ADMISSION	1,790	19,755,531
127	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	1,723	19,188,873
133	OTHER LOWER RESPIRATORY DISEASE	1,983	18,572,466
136	DISORDERS OF TEETH AND JAW	1,764	18,200,494

Source: Author's calculations based on data from the MEPS 2015 Medical Conditions file.

Table 2

Estimates of the reduction in disability, Social Security recipiency, and medical care utilization in 2015 attributable to previous pharmaceutical innovation

Person-level measure	% reduction in prevalence	actual prevalence (no. of people) in 2015	reduction in 2015 prevalence due to previous innovation
has any limitation	1.6%	66,518,606	1,087,194
has any limitation work/housework/school	2.2%	26,114,266	565,599
has limitation in physical functioning	2.3%	35,065,504	807,263
has cognitive limitations	3.2%	14,286,436	453,913
in fair or poor health	2.9%	35,023,619	1,003,716
unable to work	3.9%	13,069,508	512,337
completely unable to work at a job, do housework, or go to	4.5%	16,066,307	717,536
receives SSI	3.1%	7,962,496	247,239
receives Social Security	2.0%	50,188,176	984,418
is retired	-1.8%	29,061,321	-523,648
Condition-specific measure	% reduction in prevalence	actual prevalence (no. of conditions) in 2012 or 2015	reduction in 2012 or 2015 prevalence due to previous innovation
any bed days?	5.6%	134,426,738	7,564,874
any missed school days?	5.1%	64,262,316	3,287,568
any missed work days?	2.5%	118,108,129	2,895,970
any prescribed medicines?	-2.1%	672,272,630	-13,924,430
any emergency room visits?	2.3%	65,246,840	1,475,112
any home health visits?	9.2%	24,957,855	2,286,640
any inpatient events?	5.7%	32,072,297	1,820,489
any outpatient events?	4.1%	70,561,790	2,857,771

Table 3

Estimated value in 2015 of some reductions in disability, Social Security recipiency, and use of medical care attributable to previous pharmaceutical innovation

outcome	% reduction in prevalence	estimated value (millions of dollars)	calculation
unable to work?	3.9%	$27,124	reduction in no. of people unable to work (3.9% * 13,069,508) * average annual wages per employee ($52,942)
receives SSI?	3.1%	$2,287	3.1% * MEPS estimate of aggregate person's SSI ($73,649 million)
receives Social Security?	2.0%	$13,990	2.0% * MEPS estimate of aggregate person's Social Security ($713,228 million)
any emergency room visits?	2.3%	$1,542	2.3% * MEPS estimate of aggregate emergency room facility and doctor expense (ERTEXP15: $68,192 million)
any inpatient events?	5.7%	$56,136	5.7% * CMS estimate of aggregate hospital expenditure ($988,970 million)
any home health visits?	9.2%	$8,234	9.2% * CMS estimate of aggregate home health care expenditure ($89,872 million)
any outpatient events?	4.1%	$5,482	4.1% * MEPS estimate of aggregate outpatient facility and doctor expense (ERTEXP15: $135,354 million)
TOTAL		$114,794	

Mission

The Center produces first-class research and forges a strong link between the academic community and decision-makers in the public and private sectors around an issue of critical importance to the nation's future. Since its inception in 1998, the Center has established a reputation as an authoritative source on all major aspects of the retirement income debate.

Research

The Center's research covers any issue affecting individuals' income in retirement. Our main areas of research are Social Security, state and local pensions, financing retirement, tapping home equity, and working longer. The Center's work goes beyond economics. We seek to understand the human behavior behind individuals' decisions so that we can craft solutions that work in practice, not just in theory.

Grant Programs

The Center sponsors the Sandell Grant and Dissertation Fellowship Programs in retirement and disability research. These programs, funded by the U.S. Social Security Administration, provide opportunities for junior or non-tenured scholars and Ph.D. candidates from all academic disciplines to pursue cutting-edge projects on retirement or disability policy issues.

Squared Away Blog

The Center's popular personal finance blog translates complex academic research and financial information into an accessible form. The blog aims to help everyone – policymakers, financial providers, and the public – better understand the factors that shape households' financial decisions from college through mid-career and into retirement.

Find the Center online:

https://crr.bc.edu

@RetirementRsrch

About MRDRC

The MRDRC promotes high quality research on retirement, disability, and Social Security policy; communicates findings to the policy community and the public; enhances access to relevant research data; and helps to train new scholars. MRDRC serves the public and policy community as an authoritative source of information on a range of issues related to retirement income security.

This center is sponsored by a cooperative agreement between the Social Security Administration and the University of Michigan. Similar centers have also been launched at Boston College , NBER, and University of Wisconsin.

Read more about our research priorities, view current projects, and download more publications on our website, mrdrc.isr.umich.edu. All publications may be printed directly from the website.

Join the MRDRC mailing list to receive research publication updates, newsletters, and notice of events and training opportunities.

Contact Us

Email: MRDRCUMICH@umich.edu

Phone: (734) 615-0422

Twitter: @MRDRCumich

LinkedIn: www.linkedin.com/in/mrdrcumich

Blog: mrdrc.isr.umich.edu/blog/

The NBER Retirement and Disability Research Center (RDRC) conducts research to inform evidence-based retirement and disability policy related to Social Security's core mission of providing financial security to older people and people with disabilities. A key aim of the Center is to develop a community of researchers dedicated to these issues by supporting research projects, offering fellowships, and disseminating findings to academic and general audiences.

Our **research** focuses on five key areas of emphasis:
1. Enrollment Trends and Determinants
2. Measuring Sources of Income and Adequacy
3. Labor Force Participation
4. Program Operations
5. Related Programs and Program Interactions

The RDRC's **fellowship program** supports trainees at the pre- and postdoctoral level, encouraging research on the health, labor supply, behavioral, and other economic or policy implications of retirement and disability.

The NBER Bulletin on Retirement and Disability, a free quarterly newsletter, is available by email. To subscribe, go to https://www.nber.org/subscribe and scroll down.

In addition, research findings are available as RDRC and/or NBER Working Papers.

NBER Retirement and Disability Center
www.nber.org/programs-projects/projects-and-centers/retirement-and-disability-research-center

Contact: rdrcadmin@nber.org
NBER twitter: @nberpubs

The Center for Financial Security Retirement and Disability Research Center (CFS RDRC) at the University of Wisconsin-Madison is an applied research program which develops evidence that can assist policymakers, the public, and the media in understanding issues in Social Security, retirement, and disability policy, especially related to economically vulnerable populations. Our Center incorporates a diversity of viewpoints and disciplines; generates research findings for use in policy and practice; and is committed to the training and development of emerging scholars. The CFS RDRC vision is to develop and diversify future RDRC principal investigators.

Our Research agenda is designed around four central themes:

- Interactions between public assistance and social insurance over the life course
- The role of health, health insurance, and financial decision for household financial security
- How economically vulnerable households use work, pensions, and social insurance over the life course to maintain well-being
- The role of housing, savings, and debt for retirement security among low-net wealth households.

Our Training program is focused on offering mentored training opportunities for emerging researchers (doctoral students and junior faculty) from underrepresented backgrounds and from a range of disciplines, on issues relevant to SSA policy and practice. Our fellowship programs include In-Residence fellows and Extramural fellows. The Junior Scholar Intensive Training (JSIT) is a unique training model in collaboration with Howard University's Center on Race and Wealth, which sponsors a select group of junior faculty and newly graduated PhD students for an intensive summer training, a small research competition, career coaching, and ongoing mentoring.

Our Resources strive to highlight innovative research; publicize opportunities for emerging researchers in the area of retirement and disability research; and disseminate findings for both policymakers and the public. Sign up to receive news about RDRC research, our quarterly newsletter, publication updates and notice of events here: https://cfsrdrc.wisc.edu/contact-us.

Follow us on Twitter: @UWMadisonCFS.

RETIREMENT & DISABILITY RESEARCH (RDR) FUNDING OPPORTUNITIES

For graduate students*

- **Analyzing Relationships Between Disability, Rehabilitation and Work (ARDRAW)**

  Administered by Policy Research, Inc.

  $10,000 graduate student stipend for research on rehabilitation and return to work for SSA disability beneficiaries

  Annual application period: November–February

For doctoral candidates

- **Dissertation Fellowship Program in RDR**

  Administered by The Center for Retirement Research at Boston College

  $28,000 fellowship (up to 3) for doctoral students writing dissertations on retirement or disability topics

  Annual application period: October–January

- **Pre-Doctoral Fellowship Program in RDR**

  Administered by National Bureau of Economic Research

  $24,324 stipend (up to 2) for full-time PhD candidates to conduct retirement- and/or disability-relevant research; fellowship also provides limited funds for tuition, health insurance, research expenses, and travel

  Annual application period: November–December

For junior scholars (recent PhD recipients)

- **Post-Doctoral Fellowship Program in RDR**

  Administered by National Bureau of Economic Research

  $80,000 stipend (up to 2) for new PhDs and early career researchers to conduct retirement or disability research; fellowship also covers health insurance and provides limited funds for research expenses and travel

  Annual application period: November–December

- **Small Grant Program on Poverty, Retirement, and Disability Research**

  Administered by University of Wisconsin-Madison Center for Financial Security Retirement & Disability Research Center, collaborating with the Institute for Research on Poverty

  Up to $45,000 grants to support poverty research related to retirement and disability policies and programs

  Annual application period: December–February

- **Social Policy in Residence Postdoctoral Fellowship Program**

  Administered by University of Wisconsin-Madison Center for Financial Security Retirement & Disability Research Center

  Approximately $68,000 post-doctoral fellow stipend (depending on qualifications) for retirement and disability research relating to households facing economic barriers

  Annual application period: December–February

- **Social Policy Mentored Fellowship Program**

  Administered by University of Wisconsin-Madison Center for Financial Security Retirement & Disability Research Center

  $40,000 stipend (up to 2) for new PhDs and early career researchers

  Annual application period: December–February

- **Steven H. Sandell Grant Program**

  Administered by The Center for Retirement Research at Boston College

  $45,000 grants (up to 3) to pursue cutting-edge projects on retirement or disability issues

  Annual application period: October–January

* Masters, doctoral, or post-doctoral.

All eligible persons are welcome to apply.

We strongly encourage applications from women, minorities, people with disabilities, and veterans.

https://www.ssa.gov/policy/about/research-funding.html